THE IRON TRADE REVIEW

Volume XL CLEVELAND, MAY 16, 1907 Number 20

KEENER INTEREST

IS NOW DISPLAYED IN FINISHED LINES.

Tendency Toward Higher Prices.—Heavy Buying by Railroads.—Tool Steel Advances.—New Discount Card on Merchant Pipe and Boiler Tubes.

After several weeks during which pig iron received by far the greatest amount of attention, it is now comparatively quiet in that market and finished lines are more frequent subjects of discussion in the trade. Owing to the scarcity of crude steel and increasing labor costs, there is a tendency toward higher prices. A striking illustration of this tendency is shown in tool steel in which prices on ordinary tool steel have recently been advanced $10 per ton, while in some cases the advances on high speed steel have amounted to $20 per ton, due to increases in wages and higher cost of crude materials. The National Tube Co. has issued new discount cards showing an advance of $4 per ton on merchant pipe, which applies to business taken since March. 8. It is not expected, however, that there will be a general advance in prices of finished products, as such action is not favored by some of the leading interests.

Pig Iron Is Firm. While in most centers the buying of pig iron has not been so active as in preceding weeks, this was to be expected, and there are no signs of weakness. On the contrary, the market is firm and in nearly all centers prices on foundry grades have been advanced 50 cents to $1 per ton. Charcoal has advanced $1. There is some inquiry for Bessemer pig for first quarter of 1908, but no sales have been made. A few sales of foundry iron for first quarter of 1908 are reported. The demand for spot iron is not so insistent and in the central west there is less talk of heavy importations from England. For the first quarter of next year, the ordinary quotation is $18.50 Birmingham and $22 valley for No. 2 foundry.

Railroad Purchases. Railroads have been prominent as buyers, the most important orders placed being 167,000 tons of open-hearth rails for the Harriman lines taken by the Tennessee interests; 142,600 tons for the Pennsylvania; 28,000 tons, mostly for Pacific coast lines, placed at Pittsburg; 70,000 tons for the Chicago, Milwaukee & St. Paul, and 45,000 tons for the Burlington taken by the Illinois Steel Co. Heavy inquiries for shapes for railroads are also pending.

Iron and Steel Bars. Agricultural interests have been more active in placing orders for steel bars, although, on account of not having received concessions, they do so very reluctantly. There is danger of a shortage in the supply of steel bars, and sellers declare that buyers will be fortunate if they are able to cover for their requirements. Similar conditions apply to other lines, especially to plates. Bar iron continues weak and is selling at a very small advance over steel. In tin plate and sheets, orders for normal tonnages are being received and specifications are extremely heavy.

Coke and Old Material. Coke is still weak, and contracts have been made at lower prices than those recently quoted. Prices of old material are irregular and the market is generally weak, but improvement is noted at Chicago.

Will Build Mill.—The Buffalo Copper & Brass Rolling Mill Co., a new industry capitalized at $500,000, has purchased a site on the Military Road at North Buffalo containing five acres. A copper and brass rolling mill will be built on the property. George Ray and Robert L. Fryer are prominently identified in the project.

PROSPERITY ENJOYED

By Machine Tool Builders—Convention at Fortress Monroe.

(Special Telegram.)

Fortress Monroe, Va., May 15.—With an attendance of about 40 members, the National Machine Tool Builders Association opened its semi-annual convention at the Hotel Chamberlain Tuesday. The opening session was devoted to the work of organization and other detail affairs. President E. M. Woodward in his address referred feelingly to the death during the last six months of four leading spirits in the organization, H. J. Hendey, president of the Hendey Machine Tool Co.; Edward Z. Bullard, president of the Bullard Machine Tool Co.; Joseph F. Flather, of Flather & Co., Inc., and Henry C. Hoefinghoff, president of the Bickford Drill & Tool Co., and resolutions of regret were adopted. The president also reported the presence of himself and Secretary Montanus at the meeting of the Society for the Promotion of Industrial Peace in New York in November, and the national convention for the extension of foreign commerce at Washington in January, as well as at other meetings of various character. He explained the reason of change in date and place of this convention, referring to the historic interest of the spot. The association had six months of prosperity to report, its membership now including some 75 concerns, with the applicants.

One of the most important subjects before the association, that of cost keeping, was discussed at length Tuesday. B. A. Franklin of Boston, presented a paper on the subject, illustrating it with charts and blanks and the subject was discussed by several members. The association committee on the question was continued after presenting a preliminary report. This advocated the adoption of no specific system of book-keeping, but pointed out that the first essential is to thoroughly study the entire problem, analyzing the various items of cost in machine tool building and making sure that these are correctly distributed. The subject of "Apprentices" was discussed at the Wednesday session and meetings of the various tool committees were held.

THE WEEK IN IRON CENTERS.

PITTSBURG.

Advance in Merchant Pipe.—Wages Advanced.—Coke and Scrap Weak.

Office of THE IRON TRADE REVIEW.
521 Park Bldg., May 15.

The only new feature in the markets during the week under review was the announcement by the National Tube Co., of its discount cards on merchant pipe and boiler tubes on Tuesday, after having had them withdrawn since March 8. The new cards show an advance of $4 per ton on merchant pipe and no advance on boiler tubes. For the past two months the Youngstown Sheet & Tube Co., and Spang, Chalfant & Co., were the only pipe makers issuing card prices, but these were sent to the trade only as a guide and not as a basis upon which business would be accepted. The new card of the National Tube Co., gives the consumers discount 73, or 74 and 5 off to jobbers, $2 per ton below the price of the independent manufacturers. The new card affects all business accepted since March 8 by the leading interest which announced that business placed between that date and announcement of new prices would be subject to the new card and for deliveries at the convenience of the makers. From a manufacturing standpoint pipe mills are glutted with business to a greater extent than most other finished lines, with the possible exception of plates and steel bars. There are half a dozen fair sized tonnages offered in the market, but they have been refused on account of inability to make deliveries wanted. While neither the natural gas company nor the big pipe makers will admit it, there is a persistent rumor that a $3,000,000 contract for a pipe line into Cincinnati had been offered and refused.

The pig iron situation and the market on semi-finished material is an intricate problem to both consumers and producers at this time. The market on steel-making pig iron has been inactive during the past week on account of the sold up condition for last half delivery, but there has been a considerable movement in foundry irons at advanced prices.

The weakening factor in the bar iron market has been removed and prices have shown a stiffer tendency during the week, although the movement has been light. Deliveries on structural material are better than on any of the finished lines, on account of the greater capacity in this line although specifications are good and a fair tonnage of new business is being taken on by the mills.

At the bi-monthly wage scale conference between the Republic Iron & Steel Co., and the American Sheet & Tin Plate Co., and officers of the Amalgamated association on Friday of last week, it was shown that the selling price of shipments during the past two months on bar iron entitled the puddlers to an advance of 25 cents per ton or an increase from the 1.5 card to a 1.6 card the advance in wages being from $5.75 which has been in effect for practically a year to $6 a ton. Tin mill workers received another advance of two per cent and sheet mill workers an advance of 2.6 per cent.

The striking machinists in the Pittsburg district are not making much headway and the Mesta Machine Co., against which the greatest effort was directed, has replaced over 50 per cent of its old men. Many of the plants are still picketed by the strikers, but non-union machinists are steadily being sent in from outside points.

Coke and scrap are the only weak features in the entire situation as far as the market is concerned. Coke prices have declined 15 to 20 cents per ton on furnace coke for prompt shipment and the ideas of producers as to last half prices are not so strong as they were a week ago. During the past week, a contract through the last half of the year for 7,500 tons per month was closed at $2.35 per ton at the ovens. The corporation has stopped buying scrap after having closed for about 10,000 tons per month, for the past four months.

The absolute scarcity of semi-finished material has reached the point now where independent manufacturers of sheet and tin plate are becoming anxious as to their last half supply of steel.

Pig Iron.—There has been practically no activity in steel-making pig iron during the past week, although there are several good sized inquiries in the market. The unsold tonnages in the valleys for last half delivery is estimated at a very small percentage of the requirements of those consumers who have not already covered and the leading interests are holding what they have at $23.50 at the furnaces and consumers have refused to pay the price. While one or two furnaces with a little Bessemer iron still unsold are quoting $25 per ton for prompt shipment, this has not been paid as far as can be learned and is an extreme, the nominal price for spot shipment being about $24 at the furnace, on both Bessemer and basic iron.

There has been considerable activity in foundry irons and the transactions for the week were in the aggregate about 7,000 tons at prices ranging from $23 to $23.50, at the furnaces. Spot No. 2 northern foundry is nominally quoted at $26 valley, although one car load was sold at $27 per ton, at the furnace and several others at $30 at the furnace, but these were extreme cases and there is some iron available at $26 valley.

Imported iron is going to be a greater factor within the next two months than it has been for several years. Custom house reports show that during April over 250,000 tons was brought in from abroad. Southern foundry grades are also scarce for last half deliveries and the Sloss-Sheffield company has withdrawn entirely for last half. The minimum on southern No. 2 is now $20 Birmingham. Gray forge or mill iron is scarce and we quote the sale of 1,000 tons at $22 furnace. On last half delivery we quote as follows:

Bessemer, Valley	$ 23.00
Bessemer, Pittsburg	23.85
No. 1 Foundry, Pittsburg	23.85 to 24.35
No. 2 Foundry, Pittsburg	23.85
Gray Forge, Pittsburg	22.35 to 22.85
Basic, Valley	22.50 to 23.00
Basic, Pittsburg	23.35 to 23.85

Ferro-Manganese.—With a better inquiry in the market for ferro-manganese, prices have not improved either for prompt or last half delivery, and we quote $69 to $70 delivered Pittsburg on 80 per cent foreign ferro-manganese for prompt delivery and $66 to $67 f.r last half delivery. During the past week a sale was made of a fairly large tonnage of 11 per cent ferro-silicon at a little over $34.50 delivered Pittsburg. Imported 50 per cent ferro-silicon is quoted $110 Pittsburg; domestic 12 per cent, $36; 11 per cent, $35; 10 per cent, $34; with the lower grades imported ferro-silicon, $1 higher.

Steel.—There is an outright scarcity of semi-finished material including billets, sheet bars, tin bars and slabs. Within the past two weeks 30,000 to 40,000 tons of last half sheet and tin bar business has been offered to producers without being placed and independent manufacturers of these two finished lines are beginning to get exceedingly anxious as to the source of their steel supply. One manufacturer offered $31 Youngstown for 2,000 tons and the mill refused to consider his offer. Soft Bessemer billets are nominally quoted $30.50 to $31 Pittsburg, and open-hearth $32.00 to $32.50.

Muck Bar.—With not much bar iron being offered, we quote $37.50 to $38.00 on all pig metal muck bar, and $36.50 to $36.75 on scrap bar.

Plates.—There is comparatively little active new business on account of the filled up condition of mills in this district, producers bending every effort to make deliveries to meet the very heavy specifications of consumers. The usual percentage of plates is going into structural material, but the heaviest demands are by the steel car builders and the pipe interests. When the ship builders strike on the lakes ends, the shipyards will be in much better shape as far as their supply of material is concerned than they have been for a long time past, as they are accumulating stocks and when work is resumed they will be able to rush boats now building to completion. This strike has not materially affected the plate situation, as any specifications not taken out on account of the strike have very readily been diverted into other directions. For anything like prompt shipment the official schedule of prices is no longer effective and we quote 1.80c to 1.90c base f. o. b. mill Pittsburg, with usual extras. We quote:

Tank plate, ¼-inch thick, 6¼ to 100 inches, 1.80c to 1.90c f. o. b. mill Pittsburg. Extras are as follows per 100 pounds: Boiler and flange steel plates, 0.10c. A. B. M. A. and ordinary firebox steel plates, 0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than four inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in width over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1.00c. Gages under ¼-inch to and including 3-16-inch plate on thin edges, 0.10c; under 3-16 to and including No. 8, 0.15c; under No. 8 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—For two consecutive weeks the leading interest has operated practically 100 per cent of its sheet capacity. New business is being received in normal volume and specifications are very heavy. At the bi-monthly adjustment last week, the sheet workers received their first advance, 2.6 per cent. The average price for shipments during March and April covering 26, 27 and 28 gage was $2.40. The advance is effective through May and June. The leading interest has granted the advance to both its union and non-union sheet mill employes. Delivery promises extend from six to eight weeks by some independents to 25 to 26 weeks by the leading interest. Mills in position to give the better deliveries are getting $1.50 to $2 premium. We quote the official prices as follows:

Black steel sheets one pass, cold rolled, Nos. 11-12, 2.20c; Nos. 13-14, 2.25c; Nos. 15-16, 2.30c; Nos. 17-21, 2.35c; Nos. 22-24, 2.40c; Nos. 25-26, 2.45c; No. 27, 2.50c; No. 28, 2.60c; No. 29, 2.75c; No. 30, 2.85c; galvanized, Nos. 10-11, 2.65c; Nos. 12-14, 2.75c; Nos. 15-16, 2.85c; Nos. 17-21, 3.00c; Nos. 22-24, 3.15c; Nos. 25-26, 3.35c; No. 27, 3.55c; No. 28, 3.75c; No. 29, 4.00c; No. 30, 4.25c. Corrugated roofing, $1.85 per square for No. 28 painted, 2½-inch corrugation, and $3.25 per square No. 28.

Tin Plate.—On Monday of this week the warehouse at the Aetna-Standard plant of the American Sheet & Tin Plate Co., at Bridgeport, O., was destroyed by fire, which for a time will interfere with shipments from this plant. The stock destroyed was not large, as shipments have been running pretty close to production, not making it possible to accumulate much of a stock. The warehouse will be immediately rebuilt. The third and fourth quarter business being received is not unusually heavy, although the normal tonnage is being taken on. Despite reports to the contrary, we were unable to learn of any premiums being paid, although the leading interest has modified its percentage requirements on its rebate proposition to enable its customers to secure tin plate from independent interests where the larger company is unable to make deliveries. The bi-monthly adjustment of sliding wage scales governing hot mill labor has given tin plate workers a third two per cent advance, or six per cent above the base of the scale during May and June. While the adjustment covers directly only the union mills the American Sheet & Tin Plate Co. has made it applicable to the non-union workers. The leading interest last week operated 92 per cent of capacity. Prices are unchanged as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.90 f. o. b. mill, Pittsburg district. Terms, 30 days, less two per cent for cash in ten days.

Rails and Track Material.—Although no definite confirmation of the transaction has been received by local interests it is reported upon reasonably good authority that the Harriman lines have placed a contract for 150,000 tons of open-hearth rails for 1908 delivery with the Tennessee Coal, Iron & R. R. Co. During the past week 28,000 tons for next year's delivery was placed with a local mill, about 25,000 of this being for Pacific coast shipment. The light rail tonnage for the week has been a little under 2,000 tons. There is still practically 200,000 tons capacity open for this year delivery, but at the rate new business has been coming in in small tonnages, this will be provided for long before it causes mills any anxiety. We quote:

Fifty-pound and heavier, 500-ton lots and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; 8-pound, $40; 12-pound, $36 to $37; 16-pound, $35 to $36; 20-pound, $34 to $35; 25 to 45-pound, $33 to $34; angle splice bars for standard sections, $1.65; spikes for forward deliveries, $2.50.

Hoops, Bands and Cotton Ties.—The sale of cotton ties, since the market opened April 25 has been considerably in excess of 1,000,000 bundles, or over one-half of the estimated requirements. It is not expected that the movement from this time until October will be heavy. The price is 95 cents per bundle and one-half cent per bundle advance for each month after May 25. In hoops and bands the specifications are normal, but new business light, the leading cooperage interests being covered by contracts until July 1, when they will come in again for another year's requirements. We quote:

Hoops in carload lots, 2c; in less than carload lots, 2.10c; bands, 1.60c; base half extras as per standard steel.

Merchant Bars.—All manufacturers of steel bars are now receiving business from the implement makers and at the full schedule of 1.60c base Pittsburg and extras. While this business has been coming in slowly for about three weeks, the past week has been heavier than the two previous weeks combined and the heavy movement in this direction is expected to begin the early part of next week. Bar iron, while it is still a trifle weak, has picked up considerably and 1.75c Pittsburg is the minimum for shipments into this territory and 1.60c base Pittsburg, plus freight to point of delivery for western shipment, is the bottom. The small interest that shaded these prices is filled up. There is a good demand for cold rolled steel and shafting. We quote:

Common iron bars, 1.70c to 1.75c Pittsburg in carload lots and over; 1.75c to 1.80c in less than carloads; Bessemer steel bars, 1.60c, net; plow and cultivator, 1.60c, net; channels, angles, zees, tees, under three inches, 1.70c, all f. o. b. Pittsburg. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and

ground shafting, 50 per cent off in carload lots, and 5 per cent off in less than carloads, delivered in base territory; open-hearth spring steel, 2.25c to 2.50c; sleigh shoe flats, 1.60c to 1.65c; smooth finished machinery steel, 1.90c to 2c; toe calk, 2.10c to 2.15c. The price of planished and machine straightened tire is 1.80c, base, half tire extras. Iron finished tire up to 1½ inch and over to be sold on regular bar basis of 1.60c base, half extras, steel card.

Structural Material.—Mills are comfortably filled up on shape contracts, but not to the extent they are booked on other finished lines. With the scarcity of semi-finished material, no great stress is being put on structural. The leading construction companies are well booked up, the American Bridge Co. making no promises for delivery before September, while others can make July and August promises. One or two of the small construction interests are not in as good shape as far as business on the books are concerned and have caused some lively competition. The current inquiries are uniformly small and many of them from municipalities.

McClintic-Marshall Construction Co. got the Ellsworth avenue bridge, Pittsburg, and the Capital Construction Co. the Leonard avenue viaduct, at Columbus, O. We quote:

Beams and channels, 15-inch, and under, 1.70c; over 15 inches, 1.80c; zees, 1.70c; tees, 1.70c; angles from three to six inches inclusive, 1.70c; over six inches, 1.80c; universal and sheared plates, 6¼ inches and wider, 1.80c base.

Wire and Wire Nails.—The pressure under which manufacturers of wire products are working is tremendous. They are loaded to an extreme and are having difficulty in meeting the demands of specifications against contracts. We quote as follows:

Wire nails, jobbers' carload lots, $2; retailers' carload lots, $2.05; less than carloads, $2.10; painted barb wire, $2.15, for jobbers in carloads; retailers in carloads, $2.20; and less than carload, $2.30, with 30c for galvanizing; plain wire, $1.85 for jobbers, and $1.90 by carload.

Merchant Pipe.—Effective Tuesday, May 14, the National Tube Co., after having withdrawn its prices since March 8, issued a schedule of discounts showing an advance of $4 on all merchant pipe over the card withdrawn March 8, with the exception of sizes from 7 to 12 inches, which remain the same as they were when prices were withdrawn. The new card schedule is 73 on black and 63 on galvanized base, sizes ¾ to 6 inches. This is consumer's discount and is subject to plus one point and five off to jobbers. The Youngstown Sheet & Tube Co. still maintains its card of 72 on black and 62 on galvanized, ¾ to 6 inches, and the Marks Manufacturing Co., of Zanesville, O., is quoting 70 on base sizes. The new prices of the National Tube Co. cover all sales since March 8 that were taken subject to discounts to be established before June 1 and for delivery at convenience of the maker. The tonnage placed during this period was very heavy and about normal in comparison with the past six months, in spite of the fact that there were no definite prices. At the present time, there are several fair sized tonnages in the market upon which one or two of the pipe makers refuse to bid on account of delivery conditions. Among these inquiries are those of Booth & Flynn, Pittsburg, 20 miles of 20-inch line pipe; Philadelphia Co., Pittsburg, 14 miles of 12-inch line pipe; Ohio Fuel & Gas Co., 38 miles, 3, 4, 6, and 8-inch line pipe with some casing and tubing, altogether amounting to about 50 miles. With the settlement of difficulties between the city of Cincinnati and the natural gas company, it is expected that a very large tonnage will soon be submitted for bids. We quote the following consumers' discounts on merchant pipe, base sizes, subject to plus one point and five off to jobbers:

	—Steel— Black.	Galv.
⅛ and ¼ inch	65	49
⅜ inch	67	53
½ inch	69	57
¾ to 6 inches	73	63
7 to 12 inches	70	55
EXTRA STRONG PLAIN ENDS.		
⅛ to ¾ inch	58	46
½ to 4 inches	65	53
4½ to 8 inches	61	49
DOUBLE EXTRA STRONG PLAIN ENDS.		
½ to 8 inches	54	43

Iron Pipe.—The official discount on iron pipe to jobbers is 65 and five off for black and 55 and five off on galvanized, base sizes, ¾ to 6 inches for carload lots. We quote the following consumers' discounts:

CUT 6 FEET AND LONGER, CARLOAD LOTS.	Blk.	Gal.
⅛, ¼, and ⅜ inch	56	40
½ inch	59	48
¾ to 6 inch	64	54
7 and 8 inch	59	43
EXTRA STRONG PLAIN ENDS.		
⅛, ¼, and ⅜ inch	52	40
½ to 4 inch, inclusive	59	47
4½ to 8 inch	55	42
DOUBLE EXTRA HEAVY PLAIN ENDS.		
½ to 3 inch, inclusive	48	37
1¾ to 2¼ inch	42	59
2½ inch	47	61
6 to 13 inch	42	59
2¾ to 5 inch	52	65
	Iron.	Steel.
1 to 1½ inch	41	47

Boiler Tubes.—With the announcement of the National Tube Co. that it would issue a new card on merchant pipe discounts it also issued its old card on boiler tubes, there being no change in discounts since the card was withdrawn on March 8. There is a very heavy demand for both locomotive and merchant boiler tubes and we quote the following official discounts:

1 to 1½ inch	42	47
1¾ to 2¼ inch	42	59
2½ inch	47	61
2¾ to 5 inch	52	65
6 to 13 inch	42	59

2¼ inches and smaller, over 18 feet, 10 per cent net extra.

2¾ inches and larger, over 22 feet, 10 per cent net extra.

Coke.—The coke market is in a badly demoralized condition and big tonnages are being offered for spot shipment, both furnace and foundry grades. A few of the operators rather than shut down their plants have sold furnace coke as low as $2 per ton at the ovens, but this is exceptional, the prices for spot shipment ranging from $2.10 to $2.20 per ton. Opinion as to last half prices on furnace coke have changed materially since last week and a few contracts, July to January, have been closed at prices ranging from $2.35 to $2.45 per ton at the oven. The good grades of standard Connellsville coke have been sold at these prices while in a few particular instances coke has brought from 60 to 85 cents above these quoted prices Foundry coke is also plentiful and for spot shipment $3 to $3.25 is quoted and for last half contracts the same price. An unusually large lot of washed foundry coke is on the market at low figures. The production for both the Connellsville and lower Connellsville regions for the week ending Saturday, May 4, was 415,482 net tons as against 416,217 net tons for the week ending Saturday, April 27, and 416,583 for the week ending Saturday, April 20.

Old Material.—Very little change is noted in the scrap market and the same disinclination on the part of consumers to buy as has been noted for the past month or six weeks is still in evidence. Consumers are buying only as their requirements demand and the tendency of the market is downward rather than to steadiness or advance. The railroad lists have been heavy and sold at apparently good prices. The Carnegie Steel Co. has ceased to buy after having taken on about 10,000 tons per month for the last four months on a basis of $18 delivered on heavy melting scrap. For delivery in the Pittsburg district we quote as follows:

Heavy melting scrap, $18 to $18.25; re-rolling rails, $19 to $19.50; bundled sheet scrap, $15.75 to $16.25; iron axles, $30.50 to $31; old iron rails, $23 to $23.50; No. 1 wrought scrap, $19 to $19.25; old car wheels, $24.50 to $25; low phosphorus scrap, $22.50 to $23; machine shop turnings, $15.25 to $15.75; axle turnings, $16.25 to $16.50; cast

borings, $13.25 to $13.75; No. 1 cast scrap, $21 to $21.50.

CHICAGO.

Heavy Buying by Railroads.—Pig Iron Prices Still Advancing.

Office of THE IRON TRADE REVIEW.
1362 Monadnock Block, May 14.

Railroads continue the center of purchasing activity in iron and steel. Last week, two rail contracts from western lines, aggregating 125,000 tons, were placed with the local mill, which together with the Harriman and Pennsylvania contracts, also let last week, bring the total rail purchases near the half million ton mark. Inquiries for figures on fabricated shapes aggregate 30,000 tons, of which one-third is railroad work. Demand for riveted pipe for far western consumption continues to increase. An inquiry for 1,800 tons, or 46,000 feet, for delivery at Ely, Nev., is now before makers, in addition to the two lots mentioned a week ago, which are not yet placed. An order for 5,000 tons was let to a Pittsburg concern a few days ago by the American Smelting & Refining Co. Great interest attaches to the revival of the project for piping the water supply of the city of Los Angeles from the mountains. Riveted pipe is one of the methods proposed to carry the flow, and should this be adopted it is estimated that 300,000 tons of plate steel will be required. Pig iron has advanced another 50 cents a ton during the week; scrap also has joined in the upward march. No cessation is noted in the demand for sheets, plates or tubes; the question today is one of delivery, not price. A fairly active movement in steel bars is in progress, implement interests being the largest buyers.

Pig Iron.—Another advance of 50 cents a ton in northern and southern irons has occurred in the week under review. Southern No. 2 for the third quarter is now quoted at $21.50 Birmingham, and for the fourth quarter at $20.00 Birmingham; while northern grades for the full half are offered on the basis of $25 Chicago for No. 2 foundry. It is stated, and the fact is a noteworthy one, if true, that these prices represent the highest levels in recent years for iron bought for delivery such a long distance ahead. The local market is enjoying a fair degree of activity, with increased evidences of strength constantly cropping out. The most notable in this respect is the elimination of offers of resale iron. No more can be obtained, and some would be bought back, if it were possible. The Sloss company is offering only No. 4 and gray forge for the last half, asking for the former $20.00 Birmingham for third quarter, and $19.50 Birmingham for the fourth. Gray forge it offers at 50 cents a ton less for both deliveries. Inquiry is good for malleable Bessemer and some round lots for the last half have been sold in the past week at $25 Chicago. Standard Bessemer can still be had at $23 valley furnace, or $25.30 Chicago. Lake Superior charcoal irons have advanced $1.00 a ton, and for any delivery this year $27.50 Chicago is the minimum price. Southern spot iron is offered at $22.50 to $23.00 Birmingham for No. 2 foundry, and northern No. 2 at $27.50 Chicago. The quotations below are for the last half, the maximum price being for third quarter, and the minimum, fourth quarter.

Lake Superior charcoal.....$	27.50
Northern Foundry No. 1.....	25.50
Northern Foundry No. 2.....	25.00
Northern Foundry No. 3.....	24.50
Northern Scotch Foundry.....	25.50
Ohio Strong Softeners No. 1...	24.80 to 25.30
Ohio Strong Softeners No. 2...	24.30 to 24.80
Southern Foundry No. 1.....	24.85 to 26.35
Southern Foundry No. 2.....	24.35 to 25.85
Southern Foundry No. 3.....	23.85 to 25.35
Southern Foundry No. 4.....	23.35 to 24.85
Southern No. 1 Soft.....	24.85 to 26.35
Southern No. 2 Soft.....	24.35 to 25.85
Southern Gray Forge.....	23.35 to 23.85
Southern Mottled	22.85 to 23.35
Southern Silveries, 4 per cent to 6 per cent Silicon.....	26.85 to 27.85
Jackson Co. Silveries, 6 per cent.	29.40 to 29.90
Jackson Co. Silveries, 8 per cent.	30.40 to 30.90
Jackson Co. Silveries, 10 per cent	31.40 to 31.90
Malleable Bessemer	24.50 to 25.00

Billets and Rods.—The prices prevailing for the past six weeks continue in vogue. Local transactions are of a limited character, as very little tonnage in either product is available. Quotations are nominal at $36 to $38 Chicago for forging billets, and $37 to $39 Pittsburg for wire rods.

Iron and Steel Bars.—Implement interests are contracting for their year's requirements of steel bars more freely than was expected, in view of the refusal of mills to entertain any proposition for a reduced rate. Orders range from 500 to 5,000 tons, according to the requirements of the consumer. The leading interest in the west is taking the bulk of the current tonnage, and at the present rate of buying expects soon to have its order books filled for the year. It was sold up as far as October or November long before the present buying movement started, and its offerings for the fiscal year—July to July, are thereby curtailed. No change is noted in bar iron. New tonnage and specifications are active, and prices remain firm at 1.60c to 1.65c Pittsburg. Hard steel angles are also strong at 1.75c Chicago. We quote as follows:

Soft steel bars and bands, 1.76½c, half extras; soft steel angles, less than 3 x 3, 1.86½c; hoops, 2.16½c base, full extras. We quote bar iron from stock 2.25c, full extras; soft steel rounds and squares, 3 inches and larger, $2 per 100 pounds base; flats, 2 inches to 4 inches by ⅛ inch and larger, $2 per 100 pounds base; 4½ inches x 5 inches and 6 inches x 5-16 inch and thicker, $2 per 100 pounds base; all ovals, half rounds, $2 per 100 pounds base; steel bands $2, half extras; soft steel hoops, 2.40c to 2.50c full extras. Other sizes not mentioned above, $2 per 100 pounds base plus half extras.

Plates.—The Steel Corporation has withdrawn from the market on universal and sheared plates of all sizes. It is not only declining further tonnage, but may soon be forced to the necessity of supplementing its output with purchases in the open market. The probabilities are that the new universal mill at South Chicago will not be started before September. Independent mills have no difficulty in securing 2c Pittsburg for spot shipment, and 1.80c for later deliveries. There is an unusually active demand for riveted pipe from the far west. Within the past week, a contract for 5,000 tons of this material has been secured by the Riter-Conley Co., Pittsburg, from the American Smelting & Refining Co. An inquiry has also been received from the Nevada Consolidated Copper Mining Co., Ely, Nev., for 1,800 tons, or 46,000 feet of 32-inch pipe, ranging from ¼ inch to 3-16 inch thick. The Los Angeles project of piping its water supply from the mountains some hundreds of miles distant, using riveted pipe, has again been revived. Should this material be adopted, it is estimated that 300,000 tons of plates will be required to fill the order. Neither of the inquiries mentioned last week for 38,000 tons of riveted pipe for Boulder, Colo., or the 14 miles from Grace, Ida., has been closed. We quote prices, as follows:

Plates ¼ inch and heavier, 6¼ to 100 inches wide, either universal or sheared, 1.70c to 2c Pittsburg base. For extras see Pittsburg report. Freight rate to Chicago, 16½c per 100 pounds. Jobbers' prices for shipment from local stocks are as follows: Tank steel ¼ inch and heavier up to 72 inches wide, 2.20c; 3-16 inch up to and including 60 inches wide, 2.30c; 3-16 inch 72 inches wide, 2.55c; No. 8 up to 60 inches wide, 2.50c. Flange steel, 25c extra; heads, 25c extra.

Sheets.—No cessation in demand is noted. Mills are slowly overtaking their accumulation of orders, and better deliveries are promised at a not distant date. Premiums, however, continue to be paid. Quotations below are subject to this reservation. We quote:

Black sheets, Nos. 8, 9 and 10, 1.90c Pittsburg; No. 28, 2.60c Pittsburg. Galvanized sheets, No. 28, 3.75c Pittsburg. Freight to Chicago 16½c per 100

pounds. Jobbers' prices on carload lots or less from store are as follows: No. 10, 2.50c to 2.55c; No. 12, 2.55c to 2.60c; No. 14, 2.60c to 2.65c; No. 16, 2.70c to 2.80c; Nos. 18-20, 2.80c to 2.90c; Nos. 22-24, 2.85c to 2.95c; No. 26, 2.90c to 3c; No. 27, 2.95c to 3.05c; No. 28, 3.05c to 3.15c; No. 30, 3.35c to 3.45c. Galvanized sheets, No. 10 to 20, 3.50c to 3.55c; Nos. 22 and 24, 3.65c to 3.75c; No. 26, 3.85c to 3.90c; No. 27, 4.05c to 4.15c; No. 28, 4.25c to 4.35c; No. 30, 5.40c to 5.45c.

Structural Steel.—The North works of the Illinois Steel Co. has taken the contract for 500 tons of steel for the Central High school, of Detroit. Figures are being taken on the Orient building, Kansas City, 2,000 tons; La Salle building, St. Louis, 1,200 tons; repairs to the Eighteenth street bridge, St. Louis, 900 tons; additions to the Baltimore hotel, Kansas City, 2,000 tons; a brew house for the Schlitz Brewing Co., Milwaukee, 400 tons; crane runway, at the Pullman shops, 800 to 900 tons; and several smaller jobs. The specifications for the new Pullman shops have been revised and the steel requirements there will be between 6,500 and 7,500 tons. In addition to these items, figures are asked on various jobs by western railroads for an aggregate of 10,000 to 12,000 tons. The general contract for the Milwaukee theater has been let, but the steel contract, 2,300 tons, has not been closed. The best delivery on structural shapes from local mills is four to six weeks, according to the material demanded. Prices are without change, as follows:

Beams and channels, 3 to 15 inches inclusive, 1.70c Pittsburg. For extras see Pittsburg report. Freight rate from that city to Chicago is 16½c per 100 pounds. Quotations from stores are as follows:

All angles, three inches and larger, including six inches, $2.10 per 100 pounds; angles over 6 inches, $2.15 per 100 pounds base; beams, three inches to 15 inches, inclusive, $2.10 per 100 pounds base; channels, three inches and larger, $2.10 per 100 pounds base. Less than carload lots are $1 a ton higher than foregoing prices.

Rails and Track Supplies.—The contract placed by the Harriman lines for 157,000 tons of open-hearth rails with the Tennessee Coal, Iron & R. R. Co., provides for deliveries at the rate of 15,000 tons monthly, commencing March, 1908. Of the total, 40,000 tons is for the Illinois Central, and the balance for the Southern and Union Pacific. The requirements of the Pennsylvania lines, 142,600 tons, were also let last week. Of this order, Carnegie secured 71,500 tons; Cambria, 30,000 tons; Pennsylvania, 30,000 tons, and the Lackawanna Steel Co., 10,600 tons. The Illinois Steel Co. has secured the contract for the C. M. & St. P. requirements, 75,000 tons, and of the Burlington road, 45,000 tons. The Duluth, South Shore & Atlantic also closed last week for 4,000 tons for 1908 rolling. All these orders were taken at $28 f. o. b. mill. The demand for light rails for this year's shipment is light, and lower prices are expected in the near future. We quote as follows:

Bessemer rails, $28 to $30; less than 500-ton lots, $32; open-hearth rails, $29; light rails, Bessemer, 30 to 45-pound sections, $35; 25-pound, $36; 20-pound, $37; 16-pound, $38; 12-pound, $39, and lighter sections down to 8-pound, $45.50, all f. o. b. mill. Track supplies vary in price according to quantity and delivery. On orders accompanying rail contracts for future delivery, we quote angle bars, 1.65c; spikes, 2.35c; bolts with square nuts, 2.65c; with hexagon nuts, 2.80c. For carload lots or less, for prompt shipment, the following prices are asked: Angle bars, 2.25c to 2.75c; spikes, 2.60c to 2.70c; bolts with square nuts, 2.85c; with hexagon nuts, 3c.

Merchant Steel.—Contracts for the specialties listed below, covering requirements for the fiscal year from July to July are being taken in satisfactory volume. Specifications are also good. Prices are without change as follows:

Planished or smooth finished tire steel, 1.96½c; iron finish, up to 1½ x ½ inch, 1.91½c base; iron finish, 1½ x ½ inch and larger, 1.76½c base; channels for solid rubber tire, ¾ to 1 inch, 2.26½c, and 1⅛ inch and larger, 2.16½c; smooth finished machinery steel, 2.16½c; flat sleigh shoe, 1.81½c; concave and convex sleigh shoe, 2.06½c; cutter shoe, 2.35c; toe calk steel, 2.31½c; railway spring, 1.96½c; crucible tool steel, 7c to 8c, with higher prices asked on special grades. Shafting is very strong. Quotations are without change at 50 per cent off in car lots and 45 per cent in less than car lots in base territory.

Cast Iron Pipe.—No contract of notable size has been taken this week. The orders for Elyria, O., 500 tons, and Columbus, O., 900 tons, are still pending. Small orders are very numerous. The leading interest reports its plants filled as far as midsummer. Prices are without change as follows: Four-inch water pipe, $38.60; 6 to 12-inch, inclusive, $37.60; 16-inch and upward, $36.60; gas pipe, $1 a ton higher.

Merchant Pipe and Boiler Tubes.—The National Tube Co. has announced its discount cards on merchant pipe and boiler tubes, showing an advance of $4 per ton on the former, except for certain sizes, and no advance on boiler tubes. For details, see the Pittsburg report in this issue.

Wire Products.—The belief entertained for a few days early in the month that a let-up was apparent, has been dissipated in the past week. Orders for nails and fencing have come in very freely during the seven days under review, and requests for prompt shipment have been very pressing. Salesmen in touch with the various sections of the country are firm in the belief that current conditions will continue throughout the year. Prices are without change as follows: Wire nails, $2.15; painted barb wire, $2.30; galvanized barb wire, $2.60; smooth annealed wire, $2.30; polished staples, $2.55. Carload lots to retailers, five cents higher; less than carload lots, 15 cents higher.

Coke.—The local market continues soft. Solvay interests have been selling heavily of late, but these recently withdrew from the market. Spot inquiry for Connellsville fuel is light. The best 72-hour brands are offered for the last half at $3.15 to $3.25 Connellsville.

Old Material.—The absorption of the heavy railroad tonnage mentioned a week ago leaves no doubt as to the basic strength of the market. Prices have had an upward trend during the current week, stimulated thereto by an active demand for spot shipment from several western mills. Rerolling rails have sold as high as $19.40 Chicago, and melting rails at $18.25. The Great Northern railway has a list of 1,500 tons out, and the St. Paul, one of 1,200 tons. Prices are firmly maintained at their new levels. We quote as follows, gross tons in the first paragraph:

Old Steel Rails (less than 3 ft.)	$18.25 to 18.75
Old Car Wheels	25.00 to 25.25
Old Iron Rails	24.50 to 25.00
Rerolling Rails (3 feet and over	19.25 to 19.75
Light Section Relayers, 45 lbs. and under, subject to inspection	30.00 to 32.00
Relaying Rails, subject to inspection	28.00 to 30.00
Frogs, Switches and Guards	17.25 to 17.50
Heavy Melting Steel	15.75 to 16.25
Mixed Country Steel	12.50 to 13.00

We quote net tons as follows:

No. 1 R. R. Wrought	$15.75 to 16.00
No. 2 R. R. Wrought	14.75 to 15.00
Shafting	17.50 to 18.00
Dealers Forge No. 1	13.00 to 13.50
Pipes and Flues	12.00 to 12.50
No. 1 Cast, 150 lbs. and less	18.50 to 19.00
No. 1 Mill	10.00 to 10.50
Mixed Busheling (No. 1 & No. 2)	11.25 to 11.75
Country Sheet	8.50 to 9.00
No. 1 Boilers Cut	11.50 to 12.00
Boiler Punchings	14.75 to 15.25
Cast Borings	10.00 to 10.50
Mixed Borings, etc.	10.00 to 10.50

Machine Shop Turnings	12.00 to 12.50
Railroad Malleable	15.75 to 16.25
Agricultural Malleable	14.75 to 15.25
Stove Plate and Light Cast Scrap	14.75 to 15.00
Old Iron Splice Bars	18.50 to 19.00

CLEVELAND.

Pig Iron Quiet but Firm and Prices Are Advancing.—Coke is Weak.

Office of THE IRON TRADE REVIEW.
Browning Building, May 15.

Iron Ore.—There has been a fair movement of ore from upper lake ports during the week, but there is still considerable delay on account of cold weather. It is expected, however, that the movement for May will be about 5,000,000 tons. There is not so much complaint about car shortage at lower lake ports.

Pig Iron.—The market has been rather quiet during the week, but very strong with prices advancing. The lowest quotation on No. 2 foundry for last half is now $24, Cleveland, and from $24.50 to $25 is asked for third quarter, while for spot shipment, the usual quotation is $26. Furnaces have been taking good care of their contracts, and as foundries have bought freely, it now seems probable that there will not be as great a shortage during the last half of the year as has been anticipated. The demand for spot iron is not so insistent, and there is less talk of buying foreign iron at the advanced price of $26 delivered in Cleveland. Very little interest is shown in next year's business. The transactions in basic are few and furnaces are inclined to hold for further advances. We quote f. o. b. Cleveland for last half delivery as follows:

Bessemer	$23.90
No. 1 Foundry	24.50
No. 2 Foundry	24.00
No. 3 Foundry	23.50
No. 2 Southern	24.35
Gray Forge	22.50

Coke.—The coke market shows no improvement. Spot furnace coke can be had at from $2.10 to $2.25, and for last half at $2.35 to $2.40. Spot foundry coke is selling at $3.15 to $3.25. Last half prices are about the same.

Finished Material.—Sales aggregating about 2,500 tons of plates and shapes for new buildings in this city have been closed within a few days, and the structural material market shows considerable improvement. Bar iron continues weak, and prices are not much higher than for steel bars. All manufacturers of tool steel are advancing their prices on account of increased labor cost and high quotations on crude steel and alloys. Scott's tool steel has been advanced from 6½ cents to 7 cents per pound. Makers of high speed tools steel have advanced quotations from 65 cents to 75 cents per pound. The high cost of tungsten is an important factor in the last line of manufacture. There are increasing indications of probable advances in finished materials in harmony with the high prices of pig iron, but no definite anouncements have yet been made, except in the advances in merchant pipe. Among the rumors is one that steel bars will be advanced $2 per ton. There is a good demand for billets, and we note the sale of 1,000 tons of rerolling billets. There is also good inquiry and a fair number of sales of light rails.

Old Material.—There appears to be a more optimistic feeling present in some quarters, but this is not based on actual sales, and is attributed to sympathetic effect of the strong pig iron market. Cast iron remains strong and turnings and borings are steady. There is a good demand for heavy steel. The week has been featured by the sales of heavy railroad lists. These have included the Pennsylvania lines east with 15,000 tons, the B. & O. 5,000 tons and the N. & W. and Erie with smaller lots. The Southern railway is offering a lot of 4,000 tons to be closed Friday. We have revised our quotations and quote f. o. b. Cleveland, gross tons, as follows:

Old iron rails	$24.00 to 25.00
Old steel rails (re-rolling)	17.00 to 18.00
Old steel rails (under 6 feet)	18.50 to 19.50
Old car wheels	23.00 to 23.50
Steel boiler plate	14.00 to 14.50
Steel axles	21.50 to 22.50
Malleable iron (railroad)	18.00 to 18.50
Malleable iron (agricultural)	16.50 to 17.00
Heavy steel	16.50 to 17.00
Country mixed steel	14.50 to 15.00
Low phosphorus	21.50 to 22.50

We quote net tons as follows:

No. 1 R. R. wrought	$16.50 to 17.00
No. 1 busheling	14.50 to 15.00
No. 1 machine cast	18.00 to 18.50
Iron axles	25.00 to 25.50
Axle turnings	13.00 to 13.50
Wrought turnings (free from cast)	12.25 to 12.75
Grate bars	14.00 to 15.00
Pipes and flues	13.50 to 14.00
Tank iron	12.00 to 13.00
Hoop and band iron	8.50 to 9.00
Sheet iron	7.50 to 8.50
Wrought drillings	12.25 to 12.75
Stove plate	14.00 to 15.00
Cast borings	10.50 to 11.00

CINCINNATI.

Pig Market is Unsettled With Prices Controlled by the Furnaces.

May 14.

Pig Iron.—The market is unsettled, irregular and difficult to quote. Spot iron has sold at $22.00 and $22.50 Birmingham for southern and at $25.00 at northern furnace. There is just about enough demand for prompt iron to absorb the offerings. We quote spot iron delivered Cincinnati as follows:

Southern foundry No. 1	$25.75 to 26.25
Southern foundry No. 2	25.25 to 25.75
Southern foundry No. 3	24.75 to 25.25
Southern foundry No. 4	22.75 to 23.25
Southern No. 1 soft	25.75 to 26.25
Southern No. 2 soft	25.25 to 25.75
Southern gray forge	22.25 to 22.75
Northern No. 1 foundry	26.65 to 27.75
Northern No. 2 foundry	26.15 to 27.15
Northern No. 3 foundry	25.65 to 26.65

For May and June delivery prices range from $21.50 to $22.00 Birmingham.

For delivery in the third quarter quotations are much more irregular and prices have a wider range. The market appears to be represented by quotations of $20.50 to $21.50 Birmingham, and sales are reported within this range of prices.

For the fourth quarter business has been done at $19.50 to $20.00 Birmingham and at $23.00 for northern iron. Some furnaces are asking these prices, but they are given as fairly representing the level of values.

For the first quarter of next year, southern brands have been quoted at $18.50 and northern at $22.00 at furnace.

The low grades are still on an independent basis and subject to negotiation without regard to the quotations on the higher grades. Gray forge for May and June delivery has been sold at $19.00 to $19.50, No. 4 at $19.50 to $20.00, mottled at $18.50 Birmingham. Malleable Bessemer is quoted at $23.00 to $23.50 for the last half at northern furnace. A sale of standard Bessemer for the last quarter delivery is quoted at $22.75 valley furnace. Southern basic for prompt shipment has been sold at $21.50 Birmingham.

Several important producers have withdrawn from the market entirely. There is but little iron left for this year's delivery in the Ironton district. Southern furnaces are acting independently as to prices and practically all inquiries have to be submitted for acceptance. There is considerable inquiry, mostly for small lots from 100 to 500 tons, although an occasional order for 1,000 to 3,000 tons is placed. It is believed that the inquiry appears heavier than usual, as buyers are asking for quotations more generally than under normal conditions. It is also likely that dissatisfied customers are seeking new connections in placing orders for forward delivery, and are forsaking those furnaces that did not make deliveries this winter. The price situation is in the hands of the furnaces and it is difficult to tell how long a quotation may be good. We quote for fourth quarter delivery, delivered Cincinnati, as follows:

Southern Foundry No. 1	$23.25 to 23.75
Southern Foundry No. 2	22.75 to 23.25
Southern Foundry No. 3	22.25 to 22.75
Southern Foundry No. 4	21.75 to 22.25
Southern Foundry No. 1 soft	23.25 to 23.75
Southern Foundry No. 2 soft	22.75 to 23.25
Gray Forge	20.75 to 21.00
Northern Foundry No. 1	24.65
Northern Foundry No. 2	24.15
Northern Foundry No. 3	23.65

Finished Material.—The market is steady and there is a fairly good retail inquiry at unchanged prices. Small orders are filled here at the following quotations:

Angles, 3 x 3 and over, 2.15c to 2.25c; beams and channels, 15 inches and under, 2.15c; small angles and architectural channels, 2.10c base; plates ¼ inch and heavier, 2.10c; 3-16 inch, 2.20c; No. 8, 2.20c; sheets (blue annealed) No. 10, 2.30c; No. 12, 2.35c; No. 14, 2.40c; No. 16, 2.50c; box annealed sheets, Nos. 18 and 20, 2.65c; Nos. 22 and 24, 2.75c; Nos. 25 and 26, 2.80c; No. 27, 2.85c; and No. 28, 2.95c. Iron and steel bars, 2.00c base; boiler tubes, 60 per cent off, base, turnbuckles, 45 per cent off; rivets, 3.15c base; cold rolled shafting, 45 per cent off list; steel tire, 2.10c base.

Coke.—The market is more active and some good big contracts for forward delivery have been placed. The market is steadier in tone and, while offerings are still abundant, the demand is decidedly better. Some large consumers of foundry coke have come into the market for a year's supply and closed. Quotations are unchanged. We quote prices in the leading coke producing districts as follows:

Wise County, Va., Furnace Coke, prompt shipment	$2.75 to 2.90 per ton
Wise County, Va., Foundry Coke	3.25 to 3.50 per ton
Pocahontas Furnace Coke, prompt shipment	2.60 to 2.75 per ton
Pocahontas Foundry Coke	3.10 to 3.40 per ton
Connellsville Furnace Coke, prompt shipment	2.75 to 2.90 per ton
Connellsville Foundry Coke	3.25 to 3.75 per ton
New River Foundry Coke, prompt shipment	3.25 to 3.50 per ton
New River Furnace Coke, contract	2.75 to 2.90 per ton

*Wise County, Va., Coke on Furnace contracts is sold mainly on a sliding scale basis for pig iron prices on the following basis: $1.60 to $1.65 per ton on $9.00 pig iron, plus 17 to 18 per cent of the advance on pig iron above $9.00 Birmingham.

Old Material.—The market is steady and without material change. There is a fair inquiry, but trade is rather quiet. We quote:

Old No. 1 R. R. wrought net tons	$16.50 to 17.50
Cast machine and f'dy, net tons	18.50 to 19.50
Old iron rails, gross tons	24.50 to 25.50
Old steel rails, gross tons	18.00 to 19.00
Old short lengths, gross tons	19.00 to 20.00
Old iron axles, net tons	26.00 to 26.50
Heavy melting scrap, gross tons	20.00 to 21.00
Stove plate, net tons	14.50 to 15.50
Wrought turnings, net tons	13.50 to 14.00
Cast borings, net tons	11.00 to 11.50
Car wheels, gross tons	23.50 to 24.00

PHILADELPHIA

Some Furnaces Have Oversold—Prices are Firm and Tending Upward.

May 14.

Pig Iron.—Prices have stiffened somewhat during the past week, bringing quotations more on a parity with those reported from the south and west. Large sales have been made, and the sentiment continues most optimistic, notwithstanding talk about partial crop failures and the inability of the railroads to finance much needed improvements. The fact that consumers are ready to place orders for delivery six months from now is taken as the best answer to the predictions of a coming slump in the trade. Most furnaces in this territory are out of the market for the third quarter, and some even decline any further business for the fourth quarter. The fact is that a good many furnaces have considerably over-sold their capacity and are far behind in their deliveries. One agency here in looking over its books found only partially-filled orders for January and February delivery, and if it intends to close the year in good shape has enough iron ordered already to keep its furnaces busy up through the last quarter. This is probably rather an extreme case, but there are comparatively few furnaces that are filling orders strictly according to time specifications. There is practically no spot iron except English, and one large interest quotes $25 for all grades for the rest of the second quarter. Sales last week included some 15,000 tons of basic to a large Conshohocken concern, for which the price is said to have been $23.50 for last half. Middlesboro is in active demand at $22.50 and Scotch at $24.50. Prices for the last half, which show some increases, may be quoted as follows:

No. 1X Foundry	$25.00 to 25.50
No. 2X Foundry	24.25 to 24.75
No. 2 Plain	23.75 to 24.25
Standard Gray Forge	22.75 to 23.25
Basic	23.25 to 23.75
Low Phosphorus	27.00 to 27.50

New Material.—The market is quiet as compared with that for pig iron, and better deliveries can be promised than was the case a few weeks ago. Structural material is in good demand, but plates are a little easier. The mills report a fair volume of new business, but it is probable that matters will remain a little dull until the crop outlook clears. Prices may be quoted as follows:

Beams, channels and angles, according to specifications, 1.83½c to 2c; refined iron bars, 1.83½c to 1.88½c; steel bars, 1.83½c to 1.88½c; plates, 1.98½c to 2.03½c.

Old Material.—There is a better feeling, and mills seem more inclined to buy than they were. The demand is not great and does not extend much beyond July 1, but it is sufficient to keep prices firm, with an upward tendency. Prices may be quoted as follows:

Old steel rails	$19.00 to 19.50
No. 1 steel scrap	18.75 to 19.25
Old steel axles	22.00 to 22.50
Old iron axles	29.00 to 30.00
Old iron rails	25.50 to 26.50
Old car wheels	23.00 to 24.00
Choice scrap R. R. No. 1 wrought	20.00 to 20.50
No. 1 yard scrap	18.50 to 19.00
Machinery Scrap	21.50 to 22.00
Low phosphorus scrap	23.50 to 24.00
Wrought iron pipe	16.00 to 17.00
No. 1 forge fire scrap	16.50 to 17.00
No. 2 forge fire scrap, ordinary	11.50 to 12.00
Wrought turnings	16.50 to 17.00
Axle turnings, heavy	17.00 to 17.50
Cast borings	16.00 to 16.50
Stove plates	17.50 to 18.00

NEW YORK

Heavy Importing of Pig Iron Continues—Rail Order of Harriman Lines.

Office of THE IRON TRADE REVIEW.
Room 1005, No. 90 West St., May 14.

Pig Iron.—The heavy movement of pig iron from England continues, as a result of which prices have hardened and are now firm on the basis of $22.50, duty paid, at tidewater. The demand for early iron shows no abatement and leading importers have nothing to offer for a month ahead. In the British market No. 3 Middlesboro opened the week well above 60 shillings, with no indications of lower figures. On May 2 stores in Connal's yard were down to 381,000 tons, a decrease during the week of almost 15,000 tons and a net decline for the year of 136,350 tons. A feature of the British movement is the heavy purchasing for Italian account, 10,700 tons being shipped to that country from the Middlesboro district during April. In the same period America took slightly less than 43,000 tons, Germany practically the same amount and Holland 11,500 tons. In domestic irons the extensive buying through the year has continued and few furnaces now have any iron to offer before Oct. 1, while only a small part of their last quarter output is still to be disposed of. No extremely large tonnages are reported among the sales, but the volume of business during the week had been heavy in the aggregate. There has been less bickering on the part of purchasers and contracts have been closed quickly. Prices are firmer throughout the list and in some instances are slightly higher than a week ago. Some attractive business has been refused by southern interests, which on checking up their books find that they have sold as much of their probable outturn as is safe at this early date. Inquiries have included deliveries running through the first quarter and first half of next year, and one interesting inquiry came from a house in Austria seeking American iron for shipment there. The United States Steel Corporation is running extremely close to maximum capacity, only three of its stacks being idle, and two of these being of comparatively small importance. We quote tidewater prices as follows, the higher figures being for spot delivery.

Northern Foundry No. 1	$24.00 to 26.00
No. 2X Foundry	23.50 to 25.50
No. 2 Plain	23.00 to 25.00
No. 2 Southern Foundry	23.50 to 26.00
Basic	23.00 to 24.50

Finished Materials.—The predominating feature of the week has been the closing with the Tennessee Coal, Iron & Railway Co., of contracts for the 1908 rail requirements of the Harriman lines, in the aggregate 157,000 tons. This will be divided between the Southern Pacific, the Union Pacific and the Illinois Central. These rails are of course, open-hearth; the price at which the tonnage was placed is not announced, but representatives of the Tennessee company content themselves with stating that it was "entirely satisfactory," and laugh at the published report that the delivered price was on the same basis as for Bessemer rails. So far this year the open-hearth tonnage taken for 1908 is much heavier than the Bessemer tonnage. The sale of 500 tons of rails for shipment to Japan for use on the Imperial Railway is announced by another concern.

Structural orders placed since our last report contain few large lots, but mills are well provided with specifications and are assured of a busy summer. One large producer in this district is operating its structural mills only on single turn and disposing of its steel output in the form of billets at a more attractive figure. Among structural orders reported are the following: 1,000 tons for shops of the Boston & Albany at Springfield, Mass., to the New England Structural Co.; 800 tons for the Delaware, Lackawanna & Western shops at Scranton, to the Fort Pitt Bridge Works; 2,300 tons for two buildings in Cleveland; 1,100 tons for a building in Detroit; and a few small jobs about Pittsburg. A large part of these recent orders has been taken by independent concerns after brisk competition. A heavy tonnage is pending in the New York district and the central west.

Old Materials.—Except in the case of cast scrap, old materials are in brisk demand and the market has taken on a somewhat firmer tone. The railway lists coming out at the opening of the month totalled a larger tonnage than at first appeared. Heavy steel is eagerly sought and some good tonnages are reported among current sales. We quote gross tons, New York delivery, as follows:

Old iron rails	$24.50 to 25.50
Old steel rails, long lengths	18.00 to 18.50
Old steel rails, short pieces	16.25 to 16.75
Relaying rails	28.00 to 29.00
Old car wheels	24.00 to 24.50
Old iron car axles	28.50 to 29.50
Old steel car axles	21.00 to 21.50
Heavy melting steel scrap	16.00 to 16.50
No. 1 railroad wrought scrap	18.00 to 18.50
Iron track scrap	17.00 to 17.50
Wrought pipe	14.50 to 15.00
Cast borings	13.50 to 14.00
Wrought turnings	14.75 to 15.25
Heavy cast scrap	19.00 to 19.50
Railroad malleable	17.00 to 18.00
Agricultural malleable	15.00 to 16.00
Stove plate	15.50 to 16.00
Grate bars	14.50 to 15.00

BUFFALO.

Pig Iron Market Strong With Many Inquiries Pending.

May 14.

Pig Iron.—A decidedly strong market is reported for the opening of business this week with numerous big inquiries in the field. Prices are firm at the recent advance and there appears to be no likelihood of a slump in the local market. Some large consumers have been reported as expecting a change in the situation, but it does not seem likely, if present indications are to be relied on. The general demand is very strong for almost any early delivery iron, but there is scarcely any to be had. A little high silicon iron produced at the Buffalo furnaces is offered from time to time, but is not generally quoted, sales being made only as the iron is produced.

Cars are moving a little more freely at present and the furnaces are getting out their iron about as fast as produced, but there appears to be a likelihood of a car shortage and this fact is the cause of some anxiety here. The enormous amount of grain at the head of the great lakes is coming down the lakes to Buffalo. A great many cars are naturally needed in moving this grain from the Buffalo elevators and this, it is feared, will result in a shortage of cars in the iron movement. Furnaces are all working and turning out iron at their full capacity.

For last quarter delivery we quote as follows:

No. 1X Foundry	$23.75 to 24.00
No. 2X Foundry	23.00 to 23.50
No. 3 Foundry	22.75 to 23.00
No. 2 Plain	22.50 to 23.00
Malleable Bessemer	23.00 to 23.50
Gray Forge	22.00 to 22.50
Charcoal	27.00 to 27.50

ST. LOUIS

Pig Iron Market Strong.—Orders Coming in Freely.

May 13.

Pig Iron.—The market is very strong. Orders for the last quarter are coming in at $19.50 f. o. b. Birmingham, and the minimum for the third quarter is $20. Buyers are reported quite numerous to cover their requirements for shipment over the last half, and offers are made for first quarter and last half of $18 and $20, f. o. b. Birmingham. Our quotation for last half delivery with the freight of $3.75 from Birmingham added follows:

Southern No. 1	$23.75 to 24.25
Southern No. 2	23.25 to 23.75
Southern No. 3	22.75 to 23.25
Southern No. 4	22.50 to 23.00

Coke.—The market is about the same as last week with a tendency to more strength. Prices range from $3.50 to $3.75 for foundry, f. o. b., the ovens, to which should be added $2.80 to East St. Louis and $2.90 to St. Louis.

Connellsville 48-hour furnace f. o. b., ovens, is quoted at $2.50 to $2.60.

BRITISH IRON MARKET.

New Records in Production, Sales and Deliveries.

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.
Birmingham, Eng., May 1.

The activity in pig iron reported a week ago has been more than maintained. The attention of trade has concentrated upon Cleveland, which is just now surpassing all records. It seems impossible to keep pace with the course of events on Tees side. On Friday last the price of Middlesboro was £2-17-8d ($14.12) for cash, whereas yesterday it was £2-18-3d ($14.26), and the stocks at Middlesboro, which were then 413,568 tons, have been brought down to 403,032 tons. This is a rapid fall in three days, and the tone is still exceptionally strong. In three directions all records have been left behind. Production of pig has never reached such dimensions, the deliveries have never been so large and such great inroads have never before been made in the stocks. The shipments from the beginning of the month up to Saturday last were 139,386 tons as against 111,909 for the corresponding period of March. Demands both from America and Germany are still great. A little wages difficulty has arisen, the ironstone miners having demanded 5 per cent advance in wages. Their employers offer them 2½ per cent, since increased to 3¼ per cent. This is under consideration. The Cleveland demands have affected Midland pig irons which have been advanced by about 1s-6d per ton. This is true of Staffordshire, Northamptonshire, Derbyshire and Nottinghamshire. This has naturally stimulated buying, and some large contracts have been completed within the last few days. A great number of ships are still waiting in the Tees for cargoes. April shipments, it is clear, will be quite phenomenal.

BIRMINGHAM, ALA.

Considerable Selling of Pig Iron for the First Half of Next Year.

May 14.

Southern pig iron has sought another level, the quotations for the fourth quarter of the year being $20 and even higher. Third quarter iron is almost considered spot iron. The demand is still brisk, despite the high

prices prevailing for the product, all indications point to the need of a large quantity of iron before the end of the year. Many thousand tons of iron have been sold in this section for delivery during the first quarter of the coming year. There is no doubting the information that the 1908 iron has been selling but a few cents under prices that have prevailed recently for fourth quarter iron. This is taken to mean that consumers look upon the future with the brightest expectations.

METAL MARKET.

NEW YORK.

May 14.

Copper.—The brisk foreign demand, which has been the redeeming feature of the market for some time past, has lessened perceptibly and the situation on both sides of the water has become one approaching stagnation, with only occasional sales of small lots to meet immediate requirements. We quote as follows: Lake, 24½c to 25½c; electrolytic, 23½c to 24½c; casting, 22½c to 23c. The London market opened the week about 3c lower than the previous week.

Pig Tin.—Spot shipments are extremely hard to secure and command higher prices, but there is little interest in future deliveries. The situation here is somewhat complicated by the strike of longshoremen, which will serve to keep down shipments from abroad and thus to continue the scarcity of prompt metal. We quote as follows: Spot, 43c to 43.25c; futures, 42.00c to 42.50c. The London market is steady for futures and higher for early shipment. Exports from the Straits during the first two months of the year are available; they show a decrease over the corresponding period of last year of almost 10 per cent.

Pig Lead.—The urgent demand abroad has apparently been satisfied and prices are lower, with the market quiet and without feature. We quote: Spot, 6.00c to 6.05c in car load lots; St. Louis, 5.92½c.

Spelter.—We quote as follows: Refined, 6.55c, New York; 6.40c St. Louis. London is slightly lower.

Antimony.—We quote as follows: Cookson's, 23c; Hallett's, 20½c; ordinary brands, 20c.

CHICAGO.

May 13.

Slightly increased buying by railroads was apparent on the Chicago metal market during the week. No heavy advance purchases were made but the general volume of business was greater than for several weeks past. A sharp advance occurred in the price of pig tin. The cause is believed to be the difficulty of unloading the metal in New York because of the longshoremen's strike. Antimony dropped two cents on all grades.

Pig tin advanced from 44c and 44½c to 46c and 46½c depending on the quantity bought. Copper lake sold for 26c and casting between 25½c and 26c. Sheet zinc sold at 8.50c LaSalle in car lots of 100 pound casks. Spelter was quoted at 7¼c. Lead desilverized sold between 6.50c and 6.60c in 50 ton lots and corroding between 7.25c and 7.35c. In car lots the price was 2½c per 100 pounds higher. Cookson's antimony continued to decrease and fell from 27c to 25c and 25½; other grades dropped from 26c to 24c.

No decided change was apparent in the second hand metal market. Most metals continued at the same price and sales were few. Buyers' prices quoted were:

Copper wire, 18.50c to 19c; heavy copper 18c to 18.50c; copper bottoms, 17.25c to 17.75c; copper clips, 18c to 18.50c; red brass, heavy, 17.25c to 17.75c; yellow brass, heavy, 15.25 to 15.50c; red brass, borings, 15c to 15.75c; yellow brass, borings, 13c to 13.50c; light brass, 12c to 12.50c; zinc 5c; pipe lead, 5.50c; tea lead, 5c; tin foil, 35c; pewter No. 1, 28c.

ST. LOUIS.

May 13.

It is estimated that the zinc and lead product for the Joplin district has been decreased 300 tons during the last week because of the laying off of the night shifts at several mines. This has also had the effect of relieving the lack of men to man the mines, which has been felt for some time.

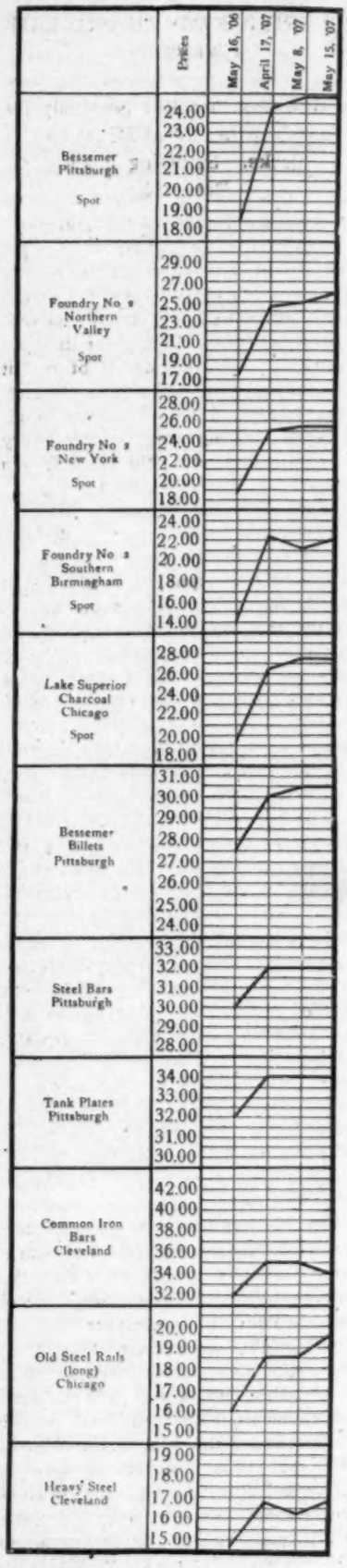
The method has been adopted by producers for the reason that labor is demanding higher wages in the face of the fact that zinc ore has been declining for the last three weeks.

The highest price paid for zinc last week was $50 a ton on an assay basis of $45 to $47 a ton of 60 per cent zinc.

Lead has held remarkably high, considering the fact that but one of the purchasing companies has stood under it.

The St. Louis Smelting and Refining Co. has kept prices pretty steady for a month, with no support from the other companies, and as a consequence is loading more than half of the lead ore.

PRICE CHART.



LARGE GAINS

ARE BEING MADE IN ORE SHIPMENTS,

But Cold Weather Has Seriously Delayed Operations at Mines and Docks.—Stripping Much Retarded.

Office of THE IRON TRADE REVIEW,
411 Providence Bldg.,
Duluth, Minn., May 11.

The summer season of mining is thoroughly started, but by no means proceeding with midsummer activity. Scarcely an open pit is sending out anywhere near the amount of ore it will a month hence. Cold weather continues to prevail in the Mesabi country, with freezing temperatures every night, so that much of the ore is frozen as it comes to the dock. In addition, the surface being frozen still necessitates winter methods where ordinarily the frost would be nearly all out of the ground. Stripping thus retarded is keeping back mining in some of the pits and at others the boat situation is troubling. One independent company operating several mines near Hibbing whose ore is carried by allied vessel interests has had to resort to stocking ore at its shaft mines and to hold up work in open pits because of delays in handling coal cargoes in and out of boats. The delay in coal boats is practically all at lower lake ports, however, as pretty good dispatch is now possible at the head of the lakes.

A warm rain would do more than anything else to advance the season in this country and would be of equal benefit to mining and crops. The crop situation is not yet critical by any means, though unusually backward. However, it is claimed by many farmers of this region that as good a crop as last can be grown if planting can proceed from now on. Boats have not the use of the No. 5 dock at Two Harbors as yet and will not until June 1, added to which the usual troubles connected with operating a new coal dock now being experienced by the Duluth & Iron Range road are holding the vessels at Two Harbors longer than under ordinary circumstances.

During the week from May 1 to May 7 the docks made large gains in the shipment of ore and it is the general expectation that the end of the month will see this year on even terms with last. What the figures show in this regard may be seen from the shipment figures for the week: Duluth, 310,370 tons against 210,936 tons in 1906. Two Harbors 212,182 tons against 218,269 tons in 1906. Superior, 193,257 tons against 112,738 tons in 1906. This means that on the 7th, Duluth was 182,300 tons behind last year, Two Harbors 291,546 tons behind and Superior 23,066 tons behind, an aggregate of 496,912 tons as compared with 670,778 tons a week ago. The interesting feature in the figures of both last week and this are the increased shipments from Superior this year over last.

The Thorpe Iron Co. has been incorporated by George H. Crosby, A. J. McLennan and H. J. Grannis for the development of western iron lands. These interests are also associated with the Charlotte Mining Co., owning iron property in Iron county, Utah, and the land acquired by the Thorpe Iron Co. is even better than the ore already held by the other company. Mr. Crosby is about to visit the property, after which a more detailed description of the property will be available.

The Soudan hill is still living up to its past reputation and in the past two weeks a further extension of the ore body has been opened up. A drift run over into the Montana deposit on the 12th level led into some ore not heretofore shown up which analyzed in places close to 68 per cent. The extent of the body is not known.

The Leonard mine, frequently mentioned as the only shipping property involved in the U. S. Steel Corporation-Great Northern ore transfer, will pass over to the Oliver Iron Mining Co. this week. Up to this time, it has been operated by the Leonard Iron Mining Co., composed largely of men connected with the Great Northern Ry. It is generally understood that the Leonard mine became a part of the deal only by consent of the Leonard Iron Mining Co.

The Alexander mine on the west end of the Mesabi range operated by M. A. Hanna & Co. last year and in 1905 will this season be worked by the Republic Iron & Steel Co., which for some time has had control of the ore. Capt. M. L. Fay was in charge of this mine last year under contract with M. A. Hanna & Co.

The Oliver Iron Mining Co. has under consideration the feasibility of using acetylene gas for lighting in the open pits at night. The establishment of a plant at Duluth for the manufacture of this gas making a supply at a reasonable price available has suggested the innovation though efforts have already been made looking toward the substitution of electric lights for the present unsatisfactory gasoline torch. No place has seemed up to this time at least suitable for locating the light elsewhere than on the steam shovel and as the steam shovel is not only the most strenuous and most abused piece of equipment in the mining or most any other business, but as used, has scarcely an inch of waste room about it, it is something of a problem to substitute for the gasoline torch poor as its light is admitted to be, any other reliable light which will occupy as small space, which can be moved about as readily, which will wear as well and which when blown to pieces by a blast can be as easily and cheaply replaced. The difficulty with the electric light aside from the placing of the generator on the shovel, it being finally set on the trucks, was in accommodating the generator to the great vibration of the shovel which was inclined to rack the small machine to pieces.

The devising of an acetylene light with its gas and water supply will be interesting to watch, as it has as many though different problems.

Prof. C. K. Leith, of the geological survey and Wisconsin University, has been taking a party of seventeen advanced students of geology from Wisconsin, Chicago and Northwestern universities on the biennial trip through the Lake Superior region. Leaving Duluth on Monday morning a week ago for Tower, the trip led across the Mesabi range to Hibbing and back to Duluth, arriving there Friday evening. The various points on the range where interesting and characteristic geological formations are shown were visited including the Biwabik, Mountain Iron and Mahoning pits. The tour also included the Gogebic range, the party expecting to go underground at the Newport mine where developments have been carried on at the greatest depths on the range. Prof. U. S. Grant, of Northwestern University, also accompanied the party.

The Falls Hollow Staybolt Co., Cuyahoga Falls, O., announces that the fire which broke out at its plant May 9 has not interfered with its operations, and that the filling of orders will not be delayed. It is stated that the plant is now running steadily, day and night, as heretofore.

The Iron Molders' Union of North America has decided by a general vote of its membership to hold a convention this year and the session will take place at Philadelphia, July 22. The total ballot on the question was not as large as was expected, but 22,523 votes being received. Of these 14,584 favored and 7,939 opposed the holding of the convention.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

PUBLISHED EVERY THURSDAY BY
THE PENTON PUBLISHING CO.
CLEVELAND.

BUFFALO .....932 Ellicott Sq.
CHICAGO ..... 1362 Monadnock Blk.
CINCINNATI ..... 124 Government Place.
NEW YORK.....1005 West Street Bldg.
PITTSBURG ..... 521 Park Bldg.
DULUTH.....411 Providence Bldg.

Subscription, $3.00 per annum. To Foreign Countries, $4.50. Advertising Rates Furnished on Application.

Change of advertising copy must reach this office ten days preceding date of publication.

The Cleveland News Co., will supply THE IRON TRADE REVIEW through the regular channels of the American News Co.

European Agents: The International News Company, Breams Building, Chancery Lane, London, E. C., England.

ENTERED AT THE POST OFFICE AT CLEVELAND, AS SECOND CLASS MATTER.

PRINTED IN AN OPEN SHOP

May 16, 1907

RENEWAL OF THE GERMAN STEEL SYNDICATE.

There is general rejoicing in Germany over the renewal of the Stahlwerks Verband, or steel syndicate. This syndicate was formed in 1904 for a period of three years to June 30, 1907, and has now been renewed for a period of five years. The total allotments, reduced to terms of steel ingots, amount to about 12,000,000 tons a year, having grown greatly in the past three years. A total of 37 members now form the syndicate, including the Westphalian steel works.

A syndicate had been formed of the Belgian steel works, contingent upon the renewal of the Stahlwerks Verband, so that it now becomes operative. The International Rail Syndicate's continuance was also made contingent upon this renewal, so that the continuance of all three organizations is now assured.

The main sticking point to the renewal of the Stahlwerks Verband was the question of interests known as works' merchants. The products of the syndicate are divided into two classes, A and B, A including semi-finished steel such as billets, also railway material and shapes, B products including wire rods and various finished materials. The syndicate sells the A products itself, while the producers sell the B products. When the syndicate was first formed, three works obtained the privilege of selling a certain tonnage of A products direct to merchants with whom they had established relations, this business being kept outside the operation of the syndicate. Other works applied for the same privilege, and the matter has been settled by allowing each producer to nominate a merchant firm, which shall receive from the syndicate an amount of material equal to 25 per cent of the producer's allotment.

The confessed reasons for which the Stahlwerks Verband exists are reasons which would be decidedly unpopular in the United States. One of its principal objects is to sell export material at much less than domestic prices, and another is to prevent competition by regulating production.

The business of the syndicated works has been very successful. Of late export shipments have been very light, but at some time during the five years for which the syndicate is renewed it is safe to assert the Germans will be under the necessity of cultivating the export trade much more largely. They will be able to put up very keen competition with the producers of other countries. Sight must not be lost of the fact that the large increase in iron and steel exports of the United States in the past two years has been accomplished in a period in which there is ample business; the British have wanted a pretty considerable tonnage, and they have gotten it without difficulty; the Germans have wanted a minimum tonnage; and there has been no trouble in their getting it. Time may show that the United States has not done a great deal more than accept the leavings.

The form of Stahlwerks Verband is totally different from that of the United States Steel Corporation, and this will have a very important bearing upon the real international competition, which hardly exists at all at present, but is certain to become keen at times. Each German steel works has an allotment, and all must participate in both the domestic and the foreign business. With the United States Steel Corporation, it is possible for one plant to be closed entirely, while other plants are operated to full capacity. With it, the cost of production, as regards export material, is the cost of production at the plant which otherwise could be closed. It is not, as pointed out before in these columns, the average cost of production of all the plants. The position of the Stahlwerks Verband is totally different. In times of relative depression, each member will desire to operate to full capacity. There is, so far as known, no convenient means of closing given plants absolutely and allowing the others to run full. Accordingly, there will be a demand for all works to run full, and this will bring Germany into the international market with much more force than it will the American interest.

The United States Steel Corporation is in by far the stronger position, as regards ultimate profits. In no respect, as to profits, is it at a disadvantage, compared with the German form of arrangement, while in some respects it possesses a great advantage. That advantage, however, will be shown in point of profits rather than in point of international tonnage. It is not so strong as the German syndicate, because it is very far from a monopoly. There are strong independent steel producers in the United States, while the Germans with their syndicate have what is practically a complete monopoly.

The International Rail Syndicate, the continuance of which is assured by the renewal of the Stahlwerks Verband, is understood to embrace some kind of an arrangement with the American rail producers, which makes an allotment of territory which lately has not been brought fully into play because there was more business than the works desired to undertake. The lines may be drawn more strictly in the future, when tonnage at export prices is more desired.

SERIOUS SITUATION

Prevails in San Francisco Strike of Iron Workers.—Labor News.

The present season of the year, bringing with it the expiration of many wage scales between employers and employes, has resulted in a number of new strikes, but there is not much serious labor trouble with the possible exception of San Francisco. In that city many of the larger foundry and machine shops are closed and thousands of iron workers are involved in an effort to secure an eight-hour day without a reduction in present wages. The California Metal Trades Association states that it refuses to grant the eight-hour work day because of the fact that nine and ten hours now constitute a working day in competing points in the east, and because the adoption of the eight-hour day in addition to the higher wage paid in San Francisco might affect the stability of those interested. The employers propose that nine hours constitute a working day; that an advance of five per cent on the minimum wage be granted, and that if at any time during the year the eight-hour day be granted in 50 per cent of the eastern centers, it shall be put in force there. The executive committee of the organization in a later statement outlined its position as follows:

"The California Metal Trades Association has fully decided to make arrangements with eastern plants to have all urgent work completed in the east, and also new work which may be brought to local shops, as the members of our association anticipate a prolonged struggle. After a careful survey of the situation by the various committees of the association we are in a position to state that every shop that has refused to concede the demands of the unions is closed, and indications point to further accessions to our ranks.

"This is the first instance in the history of San Francisco that the employers in the metal trades have recognized the unions and offered to arbitrate, in order to spare the workers, their families and a large portion of the community hardships and privation which might have been avoided."

Strikes Are Called.

Following the announcement sent out last April by the local lodge of the International Association of Machinists, strikes were called last week at the plants of the Otis Elevator Co., and the Goss Printing Press Co. The machinists say over three hundred and fifty men are affected. The companies refused to grant the demands made by the men.

Strike at St. Louis.

It is estimated that there are about 800 machinists on a strike with 500 other workmen out in sympathy in the St. Louis district. A number of the employers have offered a wage increase of 5 per cent but the men have refused to accept it. Settlements are reported, however, to have been made by two more companies, the William Ramsey Machinery Co., 418 North Third street, and the Harvey Turley Machine Co., 214 Locust street, and the strikers have returned to those plants.

Labor Notes.

Announcement is made of the settlement of the machinists' strike at the plant of the Toledo Machine & Tool Co., Toledo. The strike was declared Jan. 7 by the machinists' union upon the refusal of the company to grant the men's demand of an increase of 10 per cent in wages. The trouble was adjusted by a compromise.

The machinists' union, of Cleveland, has made formal demand on the employers in that city for a nine-hour day with a 10 per cent increase of pay

MANY CONTRACTS FOR ORE UNLOADERS.

The Wellman-Seaver-Morgan Co., Cleveland, is just finishing and is putting into operation for the opening of the navigation season of 1907, the five Hulett ore unloaders, all electric and of 10-tons bucket capacity for the United States Steel Corporation's new plant at Gary, Ind., and two for the United States Steel Corporation, Lorain Steel Works plant, Lorain, O. The same company has just completed a plant of four 5-ton ore unloaders of the fast plant type, and one storage and rehandling bridge with 7½-ton Hulett bucket for the Wheeling & Lake Erie Railroad Co., Huron, O., and has closed a contract with the Buffalo, Rochester & Pittsburg Railroad Co., for one Hulett 10-ton ore unloader, steam operated, to be ready for the season of 1908, for the docks at Buffalo, making the second Hulett unloader on these docks. The American Steel & Wire Co. has also contracted with the company for two electric Hulett 10-ton ore unloaders and one storage and rehandling bridge operating a 10-ton Hulett grab bucket, for its new docks and plant at Cleveland. These contracts make nine electric Hulett ore unloaders sold to the constituent companies of the United States Steel Corporation during the past year, and 26 Hulett ore unloaders either in operation or contracted for.

VALUABLE ORE

Said to Have Been Discovered by the Colorado Fuel & Iron Co.

(Special Correspondence.)

Pueblo, Col., May 13.—It is reported that a large vein of rich iron ore has been discovered on the Colorado Fuel & Iron Co.'s land along the St. Charles mesa. The ore assays 75 per cent metallic iron. One peculiar feature of the ore is that it is claimed to contain about 20 per cent of calcium oxide, which is commonly known as lime rock. If this is the case, it will not be necessary to charge any limestone into the blast furnaces with this ore, as blast furnace men assert that this is quite enough to serve as a flux for the furnace. The ore is represented to be very low in sulphur and phosphorus, which makes it an ideal Bessemer ore.

The Colorado Fuel & Iron Co. has recently purchased a number of expensive instruments, among which are Pitot tubes, Venturi meters, weirs, pantagraphs and viscosimeters, to be used in measuring water at the Minnequa works. These instruments are required in determining within very narrow limits the amount of water used in each department, the processes in some of the departments being such that the exact measurement of water used is absolutely necessary.

A new and interesting electrical instrument recently received at the Minnequa plant is the graphic recording wattmeter. It differs from the ordinary wattmeter in that it makes a graphical record of the current passing through it at any time during the day, while the instrument generally used simply records the total current which has passed through since the previous reading. The charts are similar in appearance to those usually employed in connection with recording steam gages and graphic recording thermometers, the latter of which are used in the United States weather bureau stations. The capacity of the instrument is 10,000 amperes, which at 220 volts would give 2,200 kilowatts, or about 3,000-horsepower.

Controls Its Output.—In a news item published in THE IRON TRADE REVIEW of May 9, concerning new coke ovens to be built by the Connellsville Central Coke Co., Pittsburg, it was stated that the output of the company's plant is controlled by J. H. Hillman & Son, of Pittsburg. The company states that it controls its own output, and any coke sold through J. H. Hillman & Son is handled as through any other broker.

PERSONAL.

H. P. Walden has been made purchasing agent of the Pullman Co., Chicago, as successor to W. A. Hughes, deceased.

Stewart Marshall, formerly Pittsburg representative of the Dunbar Furnace Co., has accepted the position of furnace manager of the plant at Dunbar, Pa.

W. T. Rynard, secretary, treasurer and general manager of the Vanadium Alloys Co., 25 Broad street, New York, is in Europe on a short business trip.

Hanson MacDowell, superintendent of the Hodge Iron Co., Hancock, Mich., has resigned to become superintendent of the Enterprise Foundry Co., Muskegon, Mich.

Edward B. Moore, of Michigan, has been appointed commissioner of patents by President Roosevelt to succeed Frederick I. Allen, resigned. Mr. Moore has been assistant commissioner for several years.

M. H. Barker, general manager of the American Tool & Machine Co., Boston, is on a business trip to Mexico in the interest of that concern. Mr. Barker is president of the National Metal Trades Association.

R. A. Hadfield, of Hadfield's Steel Foundry, Sheffield, Eng., who represented the Iron and Steel Institute at the dedication of the United Engineering building, will return to his home in about ten days. He has just retired from the presidency of the institute.

Harry McMasters Stewart has been made assistant superintendent of the blast furnaces of the Carnegie Steel Co. at Duquesne, Pa., succeeding George W. Vreeland, who has been placed in charge of the blast furnace plant at Mingo Junction, O. Mr. Stewart has been general foreman of the Duquesne blast furnaces, and his position will be filled by James Bell of Braddock.

G. P. Blackiston has resigned from the Crucible Steel Co. of America, with which he has been connected for the past eight years, to take a more active interest as president and general manager of the Pittsburg Automatic Vise & Tool Co., Pittsburg. This move was necessitated by the growth of the business of the latter company. Mr. Blackiston was associated with the Crucible Steel Co. of America as one of its practical steel experts.

Henry W. Hoyt, of Evanston, Ill., has been made a vice president of the Great Lakes Engineering Works, Detroit, and has already entered upon the discharge of his new duties. George H. Russell also continues as a vice president of the company. For the present Mr. Hoyt will be connected with the cost department, and his appointment is in keeping with the original plan contemplated at the time of the organization of the company, in which he was a prominent factor. Mr. Hoyt has served the industry in the past in the capacity of a director, but the business has grown to such an extent as to require his active participation in the management of the company's affairs. After engaging in the newspaper business and later in a hotel venture, Mr. Hoyt, in 1887, in conjunction with Philetus W. Gates, purchased an interest in the Gates Iron Works, Chicago, manufacturer of rock and ore crushing machinery. From a small plant employing less than 50 men, the institution grew until over 600 men were on its pay-roll, and Mr. Hoyt as its secretary and general manager was an active figure in this expansion. In 1901 the Allis-Chalmers Co. was organized and purchased the Gates Iron Works, the latter's secretary and general manager becoming its second vice president in charge of the sales department, a post which he held for three years. Leaving that company in 1904, Mr. Hoyt has been engaged up to the present time in carrying on his personal investments as well as the joint interests of Hoyt & Gates, a partnership extending over 23 years, which has now been dissolved. He filled in a most acceptable manner the position of president of the National Founders' Association for 1901, and previously served on the administrative council of that organization during the year 1900.

HENRY W. HOYT.

NEW RECORD

In Consumption of Ore Shipped from Lake Erie Ports.

Statistics gathered by the *Marine Review* from the various dock managers at Lake Erie ports show that the amount of ore on Lake Erie docks May 1 of the present year was 1,976,988 gross tons, as against 1,791,090 tons May 1, 1906, an increase of 185,898 tons. The statistics for three years are as follows:

IRON ORE ON LAKE ERIE DOCKS—GROSS TONS.

	May 1, 1907.	May 1, 1906.	May 1, 1905.
Toledo	147,397	52,550	71,642
Sandusky	5,439	29,320	44,444
Huron	98,106	80,728	68,100
Lorain	176,300	140,452	165,586
Cleveland	447,573	350,382	513,559
Fairport	154,246	266,162	390,869
Ashtabula	568,485	462,564	623,451
Conneaut	139,853	148,528	96,295
Erie	189,276	169,488	236,414
Buffalo	50,313	90,960	61,271
Total	1,976,988	1,791,090	2,271,631

The total rail shipments from Lake Erie ports to furnaces during the winter season (Dec. 1 to May 1) aggregated 4,275,467 tons, viz.:

	Gross tons.
On dock Lake Erie ports Dec. 1, 1906.	6,252,455
On dock May 1, 1907	1,976,988
By rail to furnaces, winter of 1906-7	4,275,467

Adding these winter shipments to 25,824,302 tons, the amount shipped to furnaces during the navigation season of 1906 gives 30,099,769 tons, as the entire consumption of ore from Lake Erie ports during the year ended May 1, 1907, as against 28,984,358 tons for the year ended May 1, 1906, 20,057,070 for the year ended May 1, 1905, 18,739,995 tons for the year ended May 1, 1904, 21,905,251 tons for the year ended May 1, 1903, 17,216,065 tons for the year ended May 1, 1902, 14,465,260 tons for the year ended May 1, 1901, 15,882,881 tons for the year ended May 1, 1900, 12,122,982 tons for the year ended May 1, 1899, and 10,209,488 tons for the year ended May 1, 1898. The following table gives stocks and shipments to furnaces during the years named:

ORE ON LAKE ERIE DOCKS, MAY 1, EACH YEAR FOR TEN YEARS.

Year.	Gross tons.	Year.	Gross tons.
1907	1,976,988	1902	2,848,194
1906	1,791,090	1901	3,050,183
1905	2,271,631	1900	1,720,656
1904	4,534,103	1899	2,073,254
1903	3,592,367	1898	3,167,915

ORE SHIPMENTS, LAKE ERIE PORTS TO FURNACE, YEARS ENDING.

Year.	Gross tons.	Year.	Gross tons.
May 1, 1907	30,099,769	May 1, 1903	21,905,251
May 1, 1906	28,984,358	May 1, 1902	17,216,065
May 1, 1905	20,057,070	May 1, 1901	14,468,260
May 1, 1904	18,739,995	May 1, 1900	15,882,881

IRON ORE SHIPMENTS, LAKE ERIE PORTS TO FURNACES, DURING WINTER PERIOD, DEC. 1 TO MAY 1.

Winter of.	Gross tons.	Winter of.	Gross tons.
1906-07	4,275,467	1902-03	3,481,887
1905-06	4,672,638	1901-02	3,011,469
1904-05	3,491,768	1900-01	2,854,487
1903-04	1,836,982	1899-1900	3,809,627

OFFICIAL PROGRAM

Of the Philadelphia Convention of the American Foundrymen's Association.

The following is the program of the tenth annual convention of the American Foundrymen's Association to be held in Philadelphia next week:

MONDAY, MAY 20, 1907.

Registration will begin at 9 A. M. at the Second Regiment Armory. Opening of the exhibition of the Foundry Supply Association.

TUESDAY, MAY 21, 10 A. M.

Opening Session.
Addresses of welcome by the Honorable, the Mayor of Philadelphia, Mr. J. E. Reyburn. By the president of the Philadelphia Foundrymen's Association, Mr. Thomas Devlin. By the chairman of the Philadelphia Entertainment Committee Dr. E. E. Brown. By the president of the Philadelphia Foremen's Association, Mr. W. A. Perrine.
Responses by President W. H. McFadden, president of the American Foundrymen's Association. By President S. T. Johnston, of the Foundry Supply Association. By Mr. Hugh McPhee, president Associated Foundry Foremen.
Presidential address of Mr. W. H. McFadden.
Report of secretary-treasurer.
Reports of committees.
Standard Methods for the Analysis of Cast Iron, by H. E. Diller, Chicago, Ill.
Nickel in Cast Iron, by James F. Webb, Elkhart, Ind.
The Supply of Skilled Labor for the Development of Our American Industries, by Vice President M. W. Alexander, American Society for Industrial Education, Lynn, Mass.
Manganese in Cast Iron, by Herbert E. Field, Pittsburg, Pa.
Business session.
Comparative Cupola Practice, by W. S. McQuillan, Warren, Pa.
Sound, Clean Castings, by David Spence, Franklin, Mass.
Cast Thread Fittings, by Henry B. Cutter, Seneca Falls, N. Y.
Shop Kinks, by the Cleveland Pattern Foreman's Association.
Small Points in the Core Room, Which Are Not Considered, H. M. Lane, Cleveland, O.
The Use of the Heated Mixer in the Foundry by J. B. Nau, New York City.
The Evolution of the Foundry Business, by Edward B. Gilmour, Elizabethtown, Pa.
The Gray Iron Foundry as a Business Venture, by Thos. D. West, Sharpsville, Pa.
The Steel Foundry as a Business Venture, by W. M. Carr, New York City.
The Malleable Foundry as a Business Venture, by Richard Moldenke, Watchung, N. J.

TUESDAY EVENING.

Smoker and vaudeville entertainment. Lu Lu Temple, Spring Garden Street below Broad Street. Admission by ticket only.

WEDNESDAY, MAY 22, 10 A. M.

Meeting of the Brass Foundrymen and allied industries. Formation of an association.
Address by Mr. Chas. J. Caley, New Britain, Conn.
Science in the Brass Foundry, by Andrew M. Fairlie, Copper Hill, Tenn.
Copper for the Brass Foundry, by F. L. Antisell, Perth Amboy, N. J.
A Few Denatured Brass Foundry Notes, by Wm. M. Parry, Brooklyn, N. Y.
A Plea for Healthful Conditions in the Brass Foundry, by Walter B. Snow, Hyde Park, Mass.
Notes on Bronze Castings, by C. E. Johnson, Dorchester, Mass.
In addition to the above papers, a number of others have been promised, and will be presented at this or a subsequent session.

WEDNESDAY, 2:30 P. M.

Business Session.
The Carnegie Technical School Foundry, by Director Hammerschlag, Pittsburg, Pa.
The Training in Foundry Work at Pratt Institute, by Prof. Wm. C. Stimpson, Brooklyn, N. Y.
Industrial Foundry Education, by Herbert E. Field, Pittsburg, Pa.
Some Facts Concerning Trade Schools, by W. W. McCarter, Marietta, Ga.
A Plea for the Apprentice, by Wm. Gebb, Jerome, Ariz.
The Universal System of Molding Machines, by Monsier E. Ronceray, Paris, France.
A New Method of Preparing Molding Sand, by Monsier E. Ronceray, Paris, France.
Industrial Betterment. Address by H. J. F. Porter, New York City.
Cost Accounts, by H. J. F. Porter, New York City.
Cupola Linings, by A. F. Spencer, Pittsburg, Pa.
The Induction Furnace.
The Cinematograph and Lantern will be used for several of these papers.

WEDNESDAY EVENING.

Set aside for general inspection of exhibit and special demonstrations, music, etc.

THURSDAY, MAY 23, 10 A. M.

Closing Session of the Brass Association. 11 A. M., Closing Session of the American Foundrymen's Association.
Address on Modern Blast Furnace Practice, by President Edgar S. Cook, Warwick Iron & Steel Co., Pottstown, Pa.
The Art of Galvanizing, by Alfred Sang, Pittsburg, Pa.
The Layout and Construction of Foundry Buildings, by Geo. K. Hooper, New York City.
Foundry Design and Construction, by F. A. Coleman, Cleveland, O.
Uniform Cost Accounts for Jobbing Foundries, as recommended by the Jobbing Founders' Association, by the cost committee of that association.
Unfinished Business.
New Business.
Election of Officers.
Adjournment.

THURSDAY AFTERNOON.

River Trip and Shad Dinner at Washington Park. By ticket only.
Visit of "Otto-Hoffman" By-Product Coke Plant, Camden Coke Co.
League Island Navy Yard, etc.

FRIDAY, MAY 24.

Visits to Plants as arranged by the Philadelphia Committee. To the Link-Belt Engineering Co. Niles-Bement-Pond Co., Camden Iron Works, University of Pennsylvania Engineering Laboratories, etc.
A limited number of visitors will be shown about a steel casting plant, malleable casting plant, light and heavy gray iron foundries, brass foundries, as well as industrial establishments. It will be necessary to apply for these at time of registration.
Headquarters at Second Regiment Armory, Broad Street below Susquehanna Avenue. Social Headquarters, Hotel Bellevue-Stratford.

ENTERTAINMENT FOR THE LADIES.

Headquarters at the Bellevue-Stratford. A secretary will be in attendance.

TUESDAY, 10 A. M.

Visit to armory and opening session of the American Foundrymen's Association.
8 P. M. Theatre party.

WEDNESDAY MORNING.

Tour through Fairmount Park. Afternoon, Visit to places of interest.

THURSDAY.

Trip to Atlantic City by special train.
All the features of the entertainment of the ladies will be in charge of a special ladies' committee.

EXPERT COMMITTEES

Considering Suggestions for Manufacture of Steel Rails.

Following the recent criticism passed upon the workmanship of the steel rail by certain railroad officials and organizations, committees of experts representing the railroads and the manufacturers are now in consultation considering suggestions of improvements in steel rail manufacture. Judge Elbert H. Gary, chairman of the United States Steel Corporation, in discussing the conference is quoted as saying:

"The manufacturers of steel rails and railroad companies realize that conditions relating to railroad operations have materially changed, and that it is desirable to use every practicable precaution against accident. With this end in view a committee of experts, appointed by the American Railway association, are in consultation with a committee of experts representing the manufacturers. Every suggestion for the improvement of present conditons will be given careful consideration and it is believed the manufacturers and railroad managers will agree upon a standard of excellence that should not be questioned.

"In my judgment, to meet the demands from the heavier equipment now employed a rail weighing 110 pounds to the yard should be the standard heavy rail, instead of the 80 and 90-pound rail now in use. All of us recall that a few years ago the heaviest rail then made was a 70 and 80-pound rail. The heaviest now made is either a 90 or 100-pound rail. In the equipment of railroads the cars carry three or four times their former capacity and the engines are correspondingly heavy."

INCREASED FREIGHT ON FINISHED PRODUCTS.

Considerable attention is now being paid by iron and steel manufacturers through their sales and freight departments to the advance in freight rates on iron and steel products, effective June 1, 1907. The increased rates are now being quoted by the sales departments and sales agents in contracting with consumers. The revised rates on pig iron, billets and cinder were given in THE IRON TRADE REVIEW several weeks ago. The new rates per 100 pounds on finished iron and steel products generally from Pittsburg to various cities and how they compare with the old tariffs are as follows:

	Present Rates. Car loads.	Less car loads.	New Rates. Car loads.	Less car loads.
Albany, N. Y.	$0.145	$0.175	$0.16	$0.19
Baltimore	.13	.16	.145	.175
Bay City, Mich.	.165	.20	.18	.21
Binghamton, N. Y.	.12	.145	.135	.16
Boston	.165	.20	.18	.21
Buffalo	.10	.12	.11	.13
Chicago	.165	.20	.18	.21
Cincinnati	.13	.165	.15	.18
Cleveland	.095	.11	.10	.13
Detroit	.13	.165	.15	.18
E. St. Louis, Ill.	.205	.245	.225	.26
Elmira, N. Y.	.12	.145	.135	.16
Indianapolis	.155	.185	.17	.195
Louisville, Ky.	.165	.20	.18	.21
Milwaukee	.185	.22	.20	.23
New York	.145	.175	.16	.19
Norfolk, Va.	.18	.225	.20	.24
Philadelphia	.135	.165	.15	.18
Richmond, Va.	.18	.225	.20	.24
Rochester, N. Y.	.105	.125	.115	.135
St. Louis	.21	.255	.23	.27
Springfield, O.	.12	.155	.14	.165
Syracuse, N. Y.	.12	.145	.135	.16
Toledo	.11	.145	.13	.16
Utica, N. Y.	.135	.16	.145	.175

CHARCOAL FURNACES MERGED.

The charcoal furnaces at Elk Rapids and Boyne City, Mich., have been merged with the Ashland (Wis.), Manistique and Newberry (Mich.), furnaces under the corporate name of Lake Superior Iron & Chemical Co. No change in selling agencies has been made. Rogers, Brown & Co. continuing to sell the Hinkle iron made at Ashland, and the Superior Charcoal Iron Co., Grand Rapids, Mich., the product of the other three furnaces, together with that of the Gladstone, Marquette and Antrim stacks.

DEATH OF FRANK H. GOODYEAR.

Frank H. Goodyear, one of the most successful and prominent men identified with the iron world of Buffalo, died May 13 at his home in that city after an illness of several months of Bright's disease. Mr. Goodyear's life history reveals brilliant business achievements, the most notable of which were the completion of the Buffalo & Susquehanna Railroad, and the successful development of the Buffalo & Susquehanna Iron Co. In these enterprises he was associated with his brother, Charles W. Goodyear. Mr. Goodyear was the son of Dr. Bradley Goodyear and was

FRANK H. GOODYEAR.

born in Groton, N. Y., March 17, 1849. Early in life he entered the lumber and railroad business, and from that time his advance was phenomenal.

OBITUARIES.

William K. Callahan, a leading manufacturer of Dayton, O., died in that city May 11, aged 43. After graduating from the Massachusetts Institute of Technology, Mr. Callahan entered the shops of W. P. Callahan & Co., machinery manufacturers, as an apprentice. By perseverance and loyalty to the interests of his employer, he rose to be the vice president and treasurer of the company, in which capacities he was serving at the time of his death. He was also interested in mechanical concerns in New Orleans and Liverpool, England, besides other lines of manufacturing.

Edmund Parker Lord, general manager of the H. K. Porter Locomotive Co., Pittsburg, died at Mercy hospital, that city, Sunday morning, May 12, as a result of injuries received while riding at his home at Edgeworth, near Pittsburg, three weeks before. At that time Mr. Lord was riding when his horse became frightened by a passing train, reared up and fell upon him. After three operations it was thought he was on a fair way to recovery when complications set in and he died very suddenly. Mr. Lord was born in Saxonville, Mass., near Boston, Mass., June 16, 1860, the son of John L. Lord. He was graduated by Yale university in 1881, and afterward by the Stevens Institute of Technology, at Hoboken. He then entered the employ of the Pennsylvania railroad, and after successive promotions he became superintendent of motive power of the Big Four railroad. After remaining in that position for a year he went to Pittsburg as superintendent of the H. K. Porter Locomotive works, remaining with that company ever since and at the time of his death having the title of general manager.

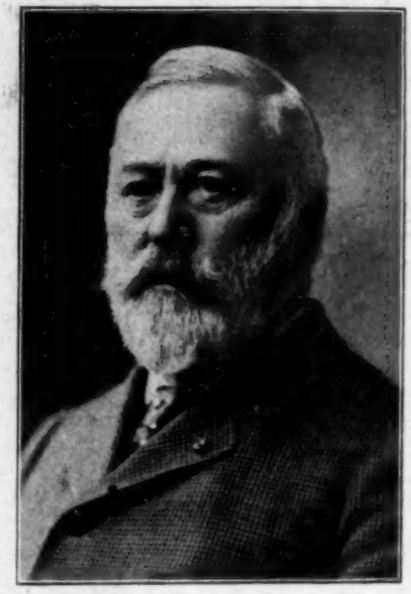
Joseph W. Lowry, president of the Duquesne Mfg. Co., and purchasing agent of the Westinghouse Airbrake Co., died at his home 3340 Ridge street, Pittsburg, May 6. Death was caused by heart failure, following a serious attack of typhoid fever. Mr. Lowry was born in Pittsburg and has always lived there.

AMALGAMATED ASSOCIATION IN SESSION.

The twenty-third annual convention of the Amalgamated Association of Iron, Steel and Tin Workers is now in session at Toledo. President P. J. McArdle in presenting his annual report stated that while there had been more strikes during the past year than for the decade past, the period, nevertheless, had been prosperous for the organization. In the reports of the officers it was declared that the Sons of Vulcan, which has assumed the name of one of the three organizations amalgamated in 1877, and is organized in opposition to the A. A. of I. S. & T. W., has not made much progress during the year. The wage scale committee is still engaged in its labors of formulating a report to the convention, and no action bearing upon wage matters has yet been taken by the association. The committee has found that some conditions and changes are desired by various crafts, and upon resolution it was decided to turn the entire convention into a temporary wage committee, subdivided according to the crafts. Each craft will make known its desire by recommendation and these will be thrashed out on the convention floor.

DEATH OF COL. SAMUEL B. DICK.

Col. Samuel B. Dick, prominent as a soldier, congressman and manufacturer, died at his home in Meadville, Pa., May 10, at the age of 71. He was the leading manufacturer of his city, owning the controlling interest in the Phoenix Iron Works, the largest privately-owned industry of the community, of which he was the chief officer. He was also president of the Meadville Malleable Iron Co., and was largely interested in railroads, gas and trust companies and other enterprises. Col. Dick served with distinction in the civil war, entering that conflict as



COL. SAMUEL B. DICK.

a captain and remaining at the front for two years until severely wounded. Later, recovering from his wounds, at the request of the secretary of war, he took charge of the Fifth regiment, Pennsylvania militia, and retained this post until the close of the war. Engaging in politics, he was elected a member of the electoral college of Pennsylvania in 1864 as a Republican, and later in 1878 served his party as a congressman in the Meadville district. He has also been honored with many positions of trust at the hands of his fellow-citizens of Meadville. Col. Dick was prominent in Masonic circles, having been chosen to some of the highest offices in that order in the state of Pennsylvania. He is survived by one son and one daughter.

Engineers are at work locating the shops and other buildings which the Northwestern railroad will erect at Pierre, S. D., this year.

LEGALITY OF PRICE AGREEMENTS

DISCUSSED AT CINCINNATI MEETING OF MACHINERY DEALERS AND MANUFACTURERS.

Other Live Topics Considered by Northern, Southern and National Associations.—Methods of Some Foreign Visitors Condemned.

The joint meeting last week at the Hotel Sinton, Cincinnati, of the American Supply and Machinery Manufacturers' Association; the National Supply and Machinery Dealers' Association, and the Southern Supply and Machinery Dealers' Association, was notable principally for its large attendance; its harmony and for the great interest manifested in the subjects selected for discussion. No new policies were adopted, none being argued; but in the rehabilitation of those always interesting and timely topics "Resale Prices" and "Cash Discounts," and the thoroughness with which they were again discussed, it was clearly apparent that each organization hoped for an early and final settlement of these vexatious questions. The spirit of reciprocity pervaded the papers and remarks of all the speakers, and through them places were made for more liberal recognition of the dealers' claims for a satisfactory resale price, and for the manufacturers' desire of an end to the abuses in discounting bills.

The only joint resolution passed had reference to the resale price. At the executive sessions of the three organizations following the joint meeting at which the papers on this subject were read, conference committees composed of three members each were appointed by each organization to formulate a plan that could be adopted as a basis from which to start a movement for an equitable settlement of this problem. This joint conference committee made the following report to the respective organizations which was adopted by each:

The joint conference committee of the three associations in conference here assembled has considered the subject of resale price in many of its various aspects; and it is convinced that the problem is one of far-reaching importance.

The sense of the conference committee seems to be that the three associations should establish permanent conference committees, who will be instructed to continue to give this subject careful thought and consideration, believing that they will find upon further investigation various lines that may be placed upon the resale basis not only to the advantage of the dealers, but also to the advantage of the manufacturers. Your committee, therefore, suggests that, after the members of the two dealers' associations have agreed that certain lines be placed upon the resale plan, they should then, if possible, secure the cooperation of the National Hardware Dealers' Association, and that the committee then present its wishes to the manufacturers' association through the members of the conference committee with the understanding and in full confidence that their requests or suggestions will be received and considered in the most sympathetic and hospitable manner and in the belief that the result will be a solution of each individual problem in a manner entirely satisfactory and equitable to all interests.

Your committee also believes that encouragement should be given by the members of the National and Southern Supply and Machinery Dealers' Associations to those manufacturers who have already or who in the future may attempt the establishment of resale prices on their goods.

C. H. Briggs.

New President of the Southern Supply and Machinery Dealers' Association.

The permanent committees appointed are as follows:

Southern Supply and Machinery Dealers' Association: W. G. Simmons, Keith Simmons & Co., Nashville, Tenn.; W. H. Bradley, Banks Supply Co., Huntington, W. Va.; H. P. Clarke, Charlotte Supply Co., Charlotte, N. C.

National Supply and Machinery Dealers' Association: L. J. Hammond, Strong, Carlisle & Hammond, Cleveland; S. S. Bradley, Patterson, Gottfried & Hunter, Ltd., New York City; J. W. Wright & Co., St. Louis, Mo.

American Supply and Machinery Manufacturers' Association: Three members of the advisory board to be selected later by the president.

The following officers were elected to serve during the ensuing year. American Supply and Machinery Manufacturers' Association: President, M. W. Mix, Dodge Mfg. Co., Mishawaka, Ind.; first vice president, Henry Sharpe, Brown & Sharpe Mfg. Co., Providence, R. I.; second vice president, L. D. May, A. Leschen & Sons Rope Co., St. Louis; third vice president, F. H. Hargraves, Cincinnati Machine Tool Co., Cincinnati, O. Executive Committee: Chairman, Charles F. Aaron, New York Leather Belting Co., New York City; J. H. Drury, Union Twist Drill Co., Athol, Mass.; Henry R. Towne, The Yale & Towne Mfg. Co., New York City; J. W. Gardner, Gardner Governor Co., Quincy, Ill., and John Trix, American Injector Co., Detroit, Mich.

National Supply and Machinery Dealers' Association: President, George Puchta, Queen City Supply Co., Cincinnati, O.; first vice president, Henry Prentiss, Prentiss Tool & Supply Co., New York City; second vice president, Wallace M. Pattison, W. M. Pattison Supply Co., Cleveland, O. Executive committee: (Hold-overs to serve one year longer) Charles A. Strelinger, C. A. Strelinger Co., Detroit, Mich.; George T. McIntosh, McIntosh Hardware Corporation, Cleveland. New members to serve two years: Charles S. Farquhar, Chandler & Farquahar, Boston, Mass.; J. W. Wright, J. W. Wright & Co., St. Louis, Mo.

Southern Supply and Machinery Dealers' Association: President, C. H. Briggs, Briggs-Weaver Co., Dallas, Texas; first vice president, J. C. Miller, Miller Supply Co., Huntington, W. Va.; second vice president, E. A. Peden, Peden Iron & Steel Co., Houston, Texas; treasurer, Alvin M. Smith, Smith-Courtney Co., Richmond, Va. Executive committee: J. A. Reichman, The Reichman-Crosby Co., Memphis, Tenn.; John G. Christopher, Jacksonville, Fla.; A. D. Schofield, J. S. Schofield's Sons' Co., Macon, Ga.; and Henry C. Clark, Charlotte Supply Co., Charlotte, N. C.

Wednesday's Session.

The convention opened Wednesday, May 8, about 10 o'clock, and continued until Friday evening. Joint meetings were held each morning, the afternoons being devoted to executive sessions by each organization. The program of the first morning session included addresses of welcome by the vice mayor of Cin-

cinnati, L. Pfaff, and by the presidents of the three organizations. T. James Fernley, secretary-treasurer National Hardware Association of the United States, also read an address at this meeting, entitled "What Advantages Can be Obtained Through Co-operation in the Trade."

E. E. Strong, president, National Supply and Machinery Dealers' Association, devoted his opening address to an analysis of the purpose of associations of the character assembled. It was full of wise saws and epigrams.

Responding for the Southern Supply and Machinery Dealers' Association, President John A. Riechman dwelt on the growth of population and industries in the south.

Responding for the American Supply and Machinery Manufacturers' Association, President Sam. L. Moyer said: "Our organization is composed of manufacturers of machinery and supplies who have put themselves on record as desiring to conduct their business in such a way as to provide what they consider is a reasonable profit and protection for the dealer. Beyond that, is also the object of the association to meet together with the various dealers' organizations, remedying evils that may crop up or exist."

At the joint meeting Thursday morning, papers were read on "Resale Prices," by George V. Denny, representing the southern organization; George Puchta, representing the National association; and Charles F. Aaron and M. W. Mix, representing the Manufacturers' associations. Addresses were also made at this meeting on the subject of the "Relation Between the Dealer and the Manufacturer," by John G. Doon, of the Southern; Wm. J. McDowell, of the National, and J. H. Drury, of the Manufacturers' associations.

Friday's joint meeting was devoted to a discussion on "Cash Discounts" and the "Cost of Doing Business." The first topic was treated in papers by Phil. Pidgeon, George T. McIntosh and Willard Parker, representing the Southern, National and American associations respectively; and the last subject by E. A. Peden, representing the Southern dealers, and Wm. H. Taylor, representing the Northern dealers.

All the papers were able presentations of their respective subjects treated from the view point of the interests of the writer. Each contribution reflected a most careful examination of all the points involved in the issue. Regret was generally voiced that more time was not available for the discussion of the several suggestions put forth, and at future meetings it was hoped the papers would be printed in advance and read by title only that a more thorough ventilation of the views of the attending members might be had. Towards this end, the Manufacturers' Association, at its first executive meeting, passed a resolution providing for the submission to its secretary, four weeks in advance of the next convention, of all papers prepared by its members, for distribution in printed form to the membership before the meeting. The other associations were given a copy of this resolution and their co-operation along the same line requested. If the suggestion is generally adopted, it will be possible for the members to acquaint themselves with the subject matters of the papers and be prepared to discuss them fully and intelligently. The past year was a prosperous one for the three organizations. The Southern association added 30 new members during the year; the National,

GEO. PUCHTA.

Chosen to Presidency of National Supply and Machinery Dealers' Association.

25, and the Manufacturers 74, the increase being 50 per cent, 25 per cent and 70 per cent respectively. None but members were allowed at the executive meeting of the dealers' organizations, and, therefore, no report of same can be given.

The first executive session of the Manufacturers' Association Wednesday afternoon was devoted largely to routine business. The interesting features of the official reports pertained to the growth in membership and healthy financial condition of the association. Since the meeting a year ago, the membership has increased from 71 to 145, 14 new members being secured at the Cincinnati convention. The receipts during the year amounted to $4,773.34, and the cash balance on hand, $100.45.

Abuse of Hospitality.

Official cognizance of the flagrant abuse of the hospitality of American manufacturers who permitted the free inspection of their plants to visiting Europeans was taken before the close of this executive session. The attention of the members was called to the matter by E. B. Pike, of the Pike Mfg. Co., Pike, N. H. Mr. Pike stated that in many cases, the real purpose behind the request of Europeans to inspect American plants was to steal the mechanical ideas of the manufacturer in question. He related several instances where the visitor was a capable engineer in the employ of a European competitor who had come over for that sole purpose, and laid emphasis upon the almost universal rule in Europe of allowing none but employes to enter manufacturing establishments there. Mr. Pike suggested as one method of benefitting by their membership, that when abuses of this kind were experienced by any member, notice of the fact should be sent to the secretary, together with the names of the visitors, that he might place the entire membership on its guard.

Before the adjournment of the executive session, the chairman appointed a nominating committee as follows: Chairman, Edward C. Hinman; John W. Neil, E. B. Pike, W. Peden and F. A. Hall.

Thursday's Joint Session.

George V. Denny, of the Georgia Supply Co., Savannah, Ga., in his paper on "Resale Prices," prefaced his remarks with the statement that a resolution was adopted at the Savannah convention of the Southern Supply and Machinery Dealers' Association, placing that organization on record as favoring the fixing by the manufacturers of a resale price, on all lines wherever practicable. "I find, furthermore," he continued, "in looking into the matter that the only objection raised by the manufacturers was the possibility of this act being construed a violation of the Sherman anti-trust law. After consulting legal authority I am led to believe that for a manufacturer to fix the price at which his goods shall be sold by his agencies or dealers is in no way a violation of any law, or of that unwritten law free rights to all men, with special privileges to none. In my judgment, there is only one thing to be done. Clothe the committee representing the manufacturers with the authority to interview manufacturers of certain articles and persuade them to fix a resale price on these goods. If success is obtained in 10 or 20 cases, much will have been done. Keep up this work year after year, and it will be only a question of time when a majority of the articles in the machinery and supply lines will be distributed on a profitable basis.

Mr. Puchta's Address.

George Puchta, president of the Queen City Supply Co., Cincinnati, followed with an able and comprehensive review of the subject from a business as well as a legal standpoint. Space prevents the publication in full of his valuable contribution. In part, he said:

The resale price. What is it? An agreement between the manufacturer and dealer whereby the manufacturer specifies a minimum price, at which he will permit his make of goods to be sold by the dealer. The resale price on the rebate plan is an agreement between the manufacturer and dealer whereby the manufacturer specifies a minimum price at which he will permit his goods to be sold by the dealer, and if the dealer has kept his agreement for an agreed period to the satisfaction of the manufacturer, he receives a rebate or commission, which in some cases is the dealer's entire profit.

The resale price on the rebate plan has produced the best results. It is an individual agreement between the manufacturer and dealer and as long as it remains an individual agreement between the two parties, the legality of it is not questioned. When two or more manufacturers collectively, or two or more dealers collectively act, then the legality is questioned.

When advised that I was expected to prepare a paper on this subject, I secured twelve different resale price agreements in effect in various lines, and gave them to a reliable attorney for an opinion, and also prepared these questions, and received the answers affixed:

1st. Do these agreements violate any laws? Answer: No.

2nd. If so, which ones?

3rd. Are these contracts binding on the parties signing them? Answer: Yes.

4th. If invalid, what form could be adopted to be valid? The no and yes to question Nos. 1 and 3 answer question 2 and 4.

I also quote from this attorney's report the following:

"If the articles manufactured are protected by patents, the manufacturers have the right to make any terms, prices, conditions, or restrictions they see fit.

"The patent statute grants an exclusive monopoly which can not be cut down by the rule against restraint, for that would be to grant a monopoly by law, and then proceed to take it away by law."

If two or more manufacturers, who produce goods of similar class or character, should combine either orally or in writing, or by a secret understanding, to put up prices, limit output, or do other things against public policy, or obnoxious to the law, it would be in restraint of trade to an extent that would be unreasonable and illegal: but if a single manufacturer of an unpatented article should make an agreement with his customers to give them a rebate, commission or discount if they should refuse to sell his product at less than a certain price, it would not be in restraint of trade, as there would be nothing to prevent others engaging in the business or the manufacturers of other articles from selling their products to any one willing to buy.

The attorney further states, "I have examined a large number of decisions, and have used the language of the courts in the foregoing, very largely."

Mr. Aaron on Resale Prices.

Charles F. Aaron, of the New York Leather Belting Co., representing the Manufacturers' association, spoke in part, as follows:

The right of the manufacturer to place a resale price on his goods is as great as that of our government to fix a uniform tax either for revenue or import duty.

This adoption of a resale price, if it will enable the manufacturer to maintain a higher standard in the quality of the goods made will be of not only inestimable advantage in advancing the position of our manufacturers as a class, but the means of saving to the users of goods produced by such manufacturers millions of dollars yearly which is now wasted in the use of goods of totally inadequate values for the services required.

M. W. Mix.

Newly elected president of the American Supply and Machinery Manufacturers' Assn.

Better Salesmanship Advocated.

In the preparation of his argument on the subject, M. W. Mix, of the Dodge Mfg. Co., Mishawaka, Ind., prepared a list of pertinent questions and mailed it to the entire membership in the Manufacturers' association. The answers to these formed the basis of Mr. Mix' deductions. He spoke in part, as follows:

While the house is badly divided against itself as to the possibility of ever adopting fixed resale prices, the theory is rather freely endorsed, as being Utopian in conception and worthy of extension in practice.

On specialty products of the supply business, the vote was generally in favor of resale prices, but almost to a member, no hope was entertained that the principle could be universally applied.

Active, honorable, conscientious competition can only be of material benefit in the trade. The very exercise of the true salesman's abilities and qualities needed to construct a permanent business structure. It must not be a "pot-hunting" proposition in any sense, else the fire of ambition and constructive detail will be stultified, to the end that chaos and senseless conditions will obtain, and affairs will react to a worse situation than has ever prevailed.

We must consider in the resale price subject, where such a policy may end? What lines shall be so handled? What would happen if all lines could be so handled? Why should not all lines be so controlled? These are all pertinent questions, and divert our thoughts towards strange channels. If it be good for one, it is so for another, and the question of drawing the line would bring about a most perplexing condition.

Granting that resale prices are desirable, until a firmly established confidence may be had between all men, there can be no general adoption of that policy on the part of manufacturers, excepting by virtue of an absolute monopoly, and this is obtainable only through the protection of United States patents, or through a trust or trade combination, whereby all outlets of manufacture and sale are under one responsible management. The former is possible in only a few specialty lines; the latter may be in restriction of trade under the Sherman act as now interpreted.

Personally I believe the solution of the problem lies in another channel, and I stand here today to make an appeal for a better quality of product and a higher standard of salesmanship.

Enough stress cannot be placed on the value of good salesmanship as a remedy for the evils due to demoralized prices. It follows from the head of the largest manufacturer amongst us to the most insignificant employe of the smallest supply house. It requires the constant education of employer and employe alike, and the task is never done, until the principle is firmly rooted.

The reading of the papers on the subject of the "Relation Between the Dealer and the Manufacturer" which will be printed in another issue of THE IRON TRADE REVIEW, completed this session.

Executive Session A. S. & M. M. A., Thursday Afternoon.

This meeting was devoted to an extemporaneous discussion on the suggestions in the papers on "Resale Prices" read that morning, and also on the subject of "Cash Discounts," which was to come up at the next joint session. Because of the frequent and unjustifiable violations of the rules regarding discounts experienced by the various houses represented, the discussion on this subject was freely indulged in. Everyone present united in the opinion that some steps should be

taken to end the abuse that had grown up, and that whatever the period allowed to benefit by the discount, the dealer should be made to understand that it meant that much and no more. John Trix, of Detroit, told of the efforts being made by the brass manufacturers to reduce the time allowance of discounts, especially in the steam goods and plumbers' lines, which he said were 60 to 90 days. Committees representing the two interests had met and thrashed out the subject, he said, and there was every reason to hope for a satisfactory settlement on the basis of 30 days' time and 2 per cent in 10 days. He suggested this plan as a basis for the association.

Mr. Hargraves, of the Cincinnati Tool Co., said his company had allowed 2 per cent cash discount for 20 years, but the practice of remitting 15, 20, 40 and 60 days, and then taking 2 per cent off, and usually several extras besides, became so general, that finally they were forced to adopt the rule of allowing no discounts under any condition. They had rigidly adhered to this rule since selling for cash 30 or 60 days according to location of buyer, and had experienced no loss of business by doing so. He called attention to the fact that net cash, 30 days, 2 per cent off in 10 days, meant 2 per cent in 20 days' time, or 1 per cent in 10 days, equivalent to 36 per cent per annum.

D. K. Swarthout, of the Ohio Blower Co., Cleveland, said his company had found that offering 2 per cent cash in 10 days did not facilitate paying bills the least bit. The firm accustomed to paying bills regularly, he had experienced, paid as promptly whether discounts were allowed or not, and personally he believed in selling 30 days net cash.

Mr. Aaron, New York City, suggested that the only solution of the difficulty was for the manufacturers in each given line to first secure the co-operation and consent of the two dealers' associations to the establishment of a uniform discount for their products and then to take the matter before other manufacturers not members of the A. S. and M. M. A., and present it to them for their co-operation in the light of a proposition coming from the dealers themselves.

Mr. Pike, Pike, N. H., told of the practice in operation among the members of another association, of which he was a member, which had been successful in reducing the number of violations against the discount law. According to this plan, if a dealer did not pay promptly, complaint was made to the secretary of the association, and when three or more of these complaints were received, the attention of the dealer in question was drawn to the oversight of his accounting department by a courteous letter.

A committee was finally appointed to formulate a plan of procedure in the premises, on which was apointed John Trix, of the American Injector Co.; E. B. Pike, Pike Mfg. Co., and F. A. Hall, the Yale & Towne Mfg. Co. Its subsequent recommendations, however, were not adopted, and the committee was disbanded.

At this session a resolution was adopted revising the by-laws to provide for advisory board of five members instead of three, as formerly, three members of which to be selected at large, the remaining two to include the retiring and incoming president.

Friday's Joint Session.

George T. McIntosh, McIntosh Hardware Corporation, Cleveland, said a strong argument in favor of the cash discount is the fixing of the credit rating of customers. "The dealer to whom you (manufacturer) sell your product must seek smaller trade, and many are not very strong but honest. We want them all to take the cash discount, as we don't want large accounts with them. We are sure that if this cash discount was 1 per cent instead of 2 per cent, very few of them would give it any attention. It is a great injustice for some few manufacturers at present crowded with business, to take advantage of the situation and arbitrarily change their terms, as a few of them have recently done. They say to us change your terms accordingly, but gentlemen we cannot. Our terms of 60 days or 2 per cent cash have been in force so long they cannot be changed. We want to pay this 2 per cent premium to parties who remit to us within the specified time. All we ask is a 5 per cent net profit on our sales. Is that exorbitant? Most of us don't make that much now, and I stand ready to offer a salary of $20,000 per annum to anyone who will guarantee our company that margin of net profit on our sales for the next ten years, without materially reducing the volume of our business. Some of you will say that the cash discount has been abused, and that instead of being taken off in 10 to 15 days some parties have taken 30 days' time, and then deducted it. That is in your hands to correct. Make your terms 2 per cent cash; if you choose to make them 2 per cent within 10 days, insist upon the money within that time, or return the check. Upon the formation of the American Steel & Wire Co., it adopted terms of 30 days net. A general protest was entered by the officers and members of the National Hardware Jobbers' Association. Soon after the selling department of that company floated under the management of that broad-minded sales manager, Frank Baackes, who did not lose much time in changing their terms to 60 days or 2 per cent cash, thus saving the hardware jobbers and supply dealers of the country thousands of dollars each year, and without one cent loss to the American Steel & Wire Co., as we understand their prices on nails and other material were placed on a five cents per hundred-weight higher basis to cover this discount. Later, this action on the part of the American Steel & Wire Co., was followed by the American Sheet & Tin Plate Co."

The papers on the "Cost of Doing Business," with a further brief discussion on "Cash Discounts" by Henry Sharpe, of Brown & Sharpe Mfg. Co., and C. C. Hanch, of Nordyke & Marmon Co., Indianapolis, closed the program for the joint session. Before the meeting adjourned, however, J. W. Wright, of J. W. Wright & Co., St. Louis, Mo., a member of the National Supply and Machinery Dealers' Association, read his report on "The Transportation Conditions of the Country."

The afternoon executive sessions were devoted to election of officers, etc. Several cities forwarded invitations to hold the next conventions within their confines, and each was referred to the respective executive committees. After suitable motions of thanks to all concerned in the entertainment of the associations, the convention adjourned sine die.

The members of the National Supply and Machinery Dealers' Association presented the retiring president, Edgar E. Strong, with a handsome silver bowl.

The Banquet.

The banquet Thursday evening was a delightful affair. Covers were laid for 375 people, of whom nearly 100 were ladies. The menus were beautiful souvenirs. On each page was a pen drawing, done in green and brown, depicting picturesque scenes around Cincinnati. George Puchta, Cincinnati, acted as toastmaster. T. James Fernley, secretary National Hardware Association, talked entertainingly on "Associations." Judge D. D. Woodmansee, of Cincinnati, responded cleverly to the toast, "The Ladies," while Judge Judson Harmon, of Cincinnati, spoke on the subject, "Some Experiences of a Lawyer in the Railroad Business."

A MODERN GRAY IRON FOUNDRY.

NEW PLANT OF THE BABCOCK & WILCOX CO., BARBERTON, O.

Novel Features of Design and Construction.—A Few Unique Molding Methods.

THE Babcock & Wilcox Co., New York, manufacturer of water tube boilers, in merging its Mansfield, O., works with its Stirling department, Barberton, O., has made extensions to the latter plant which will practically double its output. One of the numerous additions is a gray iron foundry having sufficient capacity to produce all the castings required by the other departments, and which not only embodies many novel features in design, but in the appliances for handling the raw materials as well.

In designing the foundry, the main bay of which is shown in Fig. 1, the economical conveyance of such supplies as pig iron, coke and scrap, from the foundry yard to the charging floor, received as careful consideration as the arrangement of the cupolas and molding floors. Elaborate provisions were also made for storing sand, and as shown in the ground plan, Fig. 2, the auxiliary buildings containing the brass foundry, core department, wash rooms and sand mixer, are conveniently located.

The Foundry.

The main building is 500 x 132 feet, of steel construction, with brick curtain walls. The central bay, in which the heavier floor work is made, is 58 feet 5 inches wide, and is commanded throughout its entire length by two electric travelers of 10 tons capacity each, installed by the Niles-Bement-Pond Co., New York. The lean-tos are each 35 feet wide, the one shown in Fig. 3 being devoted entirely to machine molding. In the lean-to on the opposite side are located the cupolas, cleaning and bench molding departments, as well as a floor for smaller castings. The building is well lighted and ventilated. The top row of ventilator windows which extend its entire length are 5 feet high, and as the distance from the floor level to the peak of the structure is 60 feet, gases and smoke generated while pouring off are rapidly carried away. Intermediate rows of side lights also extend the length of the lean-tos, and the natural illumination is such that the use of artificial light, even on the darkest days, is entirely obviated. Arc lamps have, however, been provided for night operations. A height of 25 feet to the top of the crane rail insures ample head room, in the center span, while the building is 37 feet high to the under side of the main roof truss. To permit of the use of the travelers on a crane runway extending into the yard, if desired, swinging doors have been placed in both ends of the building through which the cranes can operate and carry their loads. Similar arrangements have been made in the buildings of some of the other departments to permit of the loading and unloading of cars outside of the shops.

FIG. 1.—BENCH MOLDING DEPARTMENT, BABCOCK & WILCOX FOUNDRY.

Cupolas.

Although only two cupolas have been installed, provisions have been made for four. The furnace rooms, Fig. 4, are

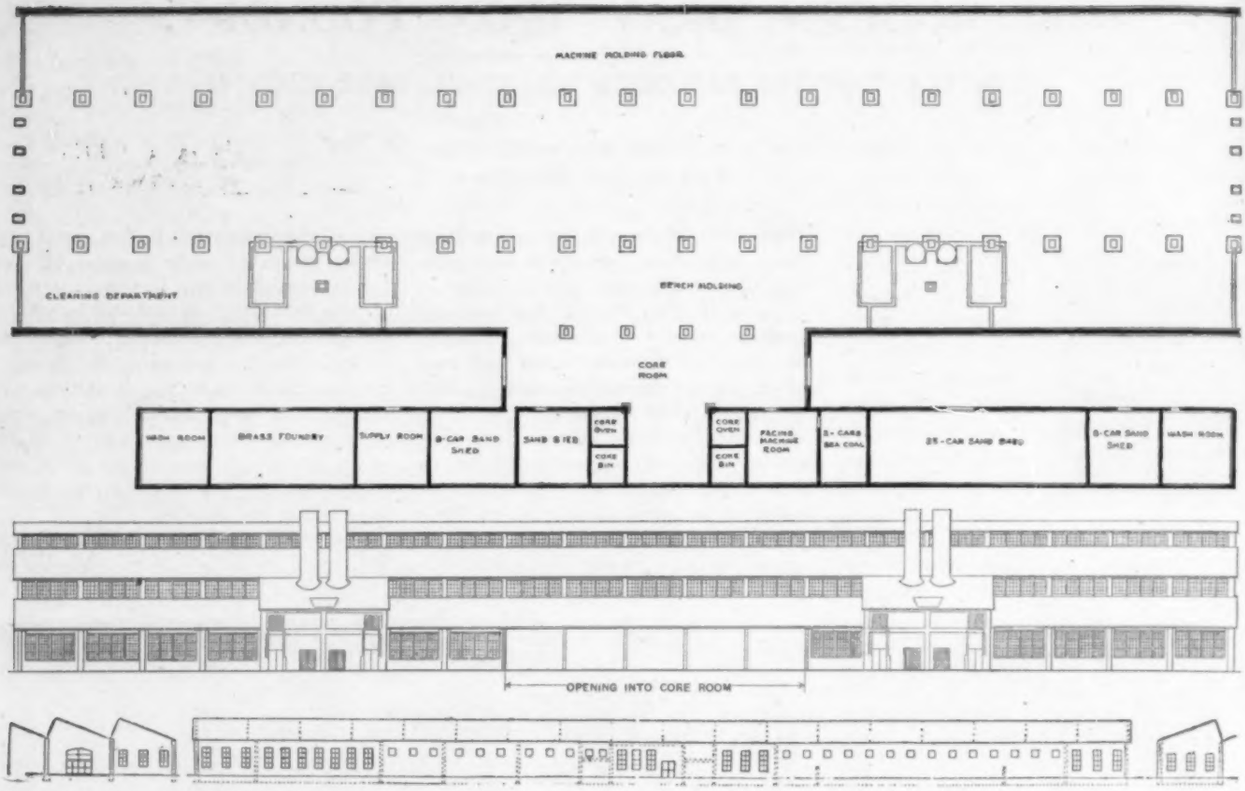


FIG. 2.—GROUND PLAN AND SIDE ELEVATIONS OF FOUNDRY AND AUXILIARY BUILDINGS.

located in one lean-to, and to reduce to the minimum the distance which the iron has to be carried, they are placed midway, one-half the length of the foundry. These rooms are divided from the remainder of the departments by brick walls, and brick curtain walls separate the blower rooms from the cupolas, the blast pipes being carried through the brick walls. As the blower rooms are entirely enclosed, they are practically free from the dust and sparks which shorten the periods of usefulness of equipment unnecessarily exposed. The two cupolas have a diameter of 66 inches inside the lining, and were installed by the Whiting Foundry Equipment Co., Harvey, Ill. The blast pipes, which are 21 inches in diameter, are connected with the cupolas in almost a straight line and have only a slight bend where they connect with the discharge of the blowers. Air is furnished by two No. 6 blowers installed by the Piqua Blower Co., Piqua, O., and the Connersville Blower Co., Connersville, Ind., respectively. They are direct connected to 55-horsepower motors installed by the General Electric Co., Schenectady, N. Y., and their speed can be regulated and maintained as required by controllers furnished by the Cutler-Hammer Mfg. Co., Milwaukee. The two cupola rooms are each 58 x 35 feet, and the four blower rooms 16 x 25 feet.

FIG. 3—GENERAL VIEW OF BABCOCK & WILCOX CO.'S FOUNDRY, BARBERTON, O.

Charging Floors.

The charging floors each have an area of 74 x 60 feet, and have been raised to a height of 17 feet above the foundry floor. Coke, iron and scrap are elevated to this floor by means of a gantry crane, the charging buggies being deposited on the platforms erected outside of the building on a level with the charging floors. For the movement of the buggies an industrial track system has been installed, equipped with tables for the turning of the cars. The buggies are received on the charging floor on one platform, and after the material has been unloaded they are pushed on to the other platform, from which they are lowered to the yard by the crane. This continuous movement precludes the accumulation of material on this floor while a heat is being run. Each buggy carries a charge of 4,000 pounds, the charges being made up and weighed in the yard. The coke bins have a storage capacity of about 40 tons, and are built with steel plate sides. The floors of the bins, as well as the floor of the remainder of these departments, are made of cement. Coke is delivered through

openings in the roof, as shown in the side elevation, Fig. 2, from a clam shell bucket depending from the gantry crane. This method of conveying the coke from the yard, in addition to its novelty, has greatly reduced the cost of handling and the breakage of this material as well. These openings are provided with sliding doors, which are closed in inclement weather, thus keeping the coke entirely under cover, and can be opened for ventilation when desired. Two hydraulic elevators have also been provided for each charging floor, but are only used in emergencies and in the event of a breakdown of the yard crane. Such large sections as boiler fronts, fire door panels, columns and heavy castings generally are made on the floor in the main bay, and fire, cleaning, and inspection doors and frames are made on molding machines in one of the lean-tos. The equipment of this floor consists of nine machines of the stripping plate type, as well as several of the roll-over design

FIG. 3.—MACHINE MOLDING FLOOR.

FIG. 4.—THE CUPOLAS.

installed by the Tabor Mfg. Co., Philadelphia.

Core Department.

The bench molding floor, shown in Fig. 1, is located between the cupola rooms, and the core department, part of which is devoted to the storage of current patterns, is located in a lean-to on the west side of the building and is 125 x 30 feet in dimensions. This building opens into the bench molding department, and provides for the easy delivery of patterns and cores to the various floors. In design, it differs from the main structure, having concrete walls 18 inches at the base, and a height of 17 feet to the gable. The roof is of the saw-tooth type and has a row of windows set at an angle of 15 degrees in the trusses of the east side. Opening into the core room is another building, 30 x 450 feet, in which the core ovens are located. This equipment consists of two Millett ovens, installed by the Millett Core Oven Co., Brightwood, Mass., in which the smaller cores are dried, and two large ovens which are coke fired from the outside, respectively 20 x 13½ feet and 15 x 13½ feet. The larger cores are baked in these ovens on rack buggies, which operate on tracks extending into the core room. Shelves have also been arranged on one side of these ovens, on which some of the small cores are dried on plates, which materially increases the drying capacity.

Sand Sheds.

The sand sheds and facing machine room in this building open into the foundry through the core department. This structure has a saw-tooth roof, concrete walls, and concrete partitions separate the different departments. The wash rooms are located at either end are 30 feet square. They are provided with enameled basins, hot and cold running water, and other conveniences for the welfare of the workmen. The brass foundry, which has not yet been equipped, occupies a space 60 x 30 feet, and the room in which the smaller foundry supplies are carried is 30 x 30 feet. The sand sheds for the storage of the various grades are respectively 35 x 30 feet, 45 x 30 feet, 30 x 30 feet, and 90 x 30 feet, and have a combined capacity of 43 cars. The sea coal storage department is 20 x 30 feet, and has a storage capacity of two cars. The sand is delivered to the sheds through openings in the roof from a clam shell bucket operated by a gantry crane and is unloaded from the car in a similar manner.

Cleaning Department.

The cleaning department is located at one end of a lean-to of the main building, and is equipped with four tumbling barrels, three pedestal and three swinging grinders, all operated from one shaft, driven by a 25-horsepower General Electric motor. The larger sections are cleaned on the floor at this end of the

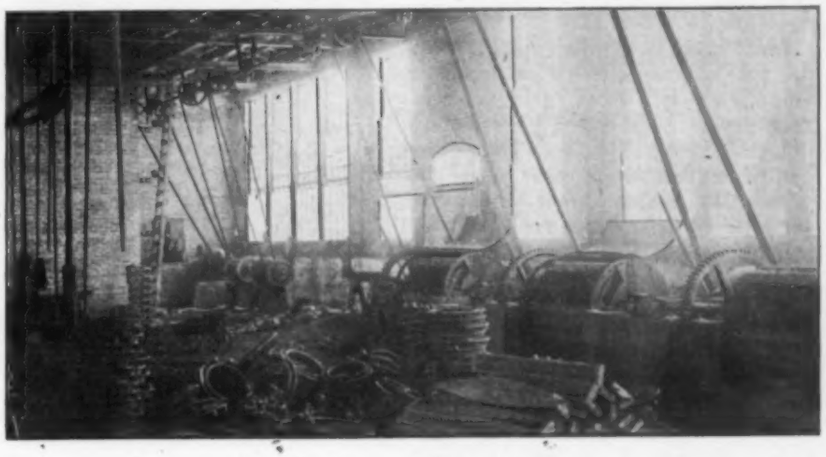


FIG. 5.—CLEANING DEPARTMENT.

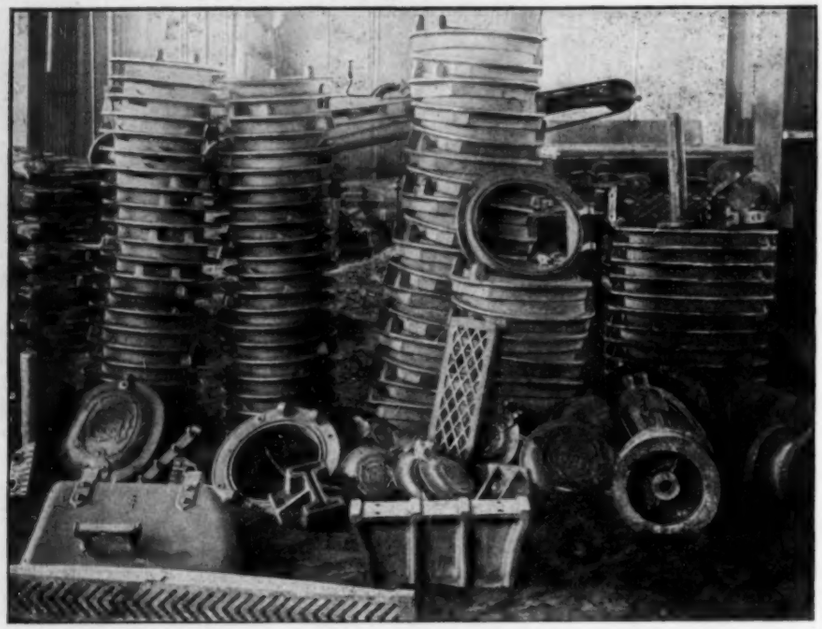


FIG. 6.—SOME OF THE PRODUCT.

foundry, and the castings are delivered to the machine shop on a large flat car, which operates on a standard gauge track extending across this end of the building. This reduces the cost of handling to the minimum and also provides for direct communication between these two departments. At the other end of this lean-to is another floor molding department, which will be devoted to special work.

Gantry Crane.

The gantry crane, shown in Figs. 8 and 9, which operates between the foundry group and the machine shop, is used for unloading pig iron from the cars by means of a magnet, for the delivery of coke from the coke pile to the charging floor, and for unloading sand from cars and carrying the same to the sand sheds. In addition, it raises the buggies containing the charges of pig iron and scrap, which are made up in the yard, to the platforms outside of the charging door, and likewise lowers these buggies to the ground. Incoming material is received on cars which operate on tracks underneath the center span, and the crane has sufficient travel to cover the flask yard of the foundry. It has a length over all of 225 feet and a center span of 60 feet. The east arm, over the foundry, is 76 feet long, and the west arm, which extends over the machine room, is 89 feet long. The trolley has a capacity of six tons. The height of the bridge from the track is 45 feet, and the distance to the top of the bridge is 62 feet. The electric current is taken from the conductor rail on either side of the rails on which the bridge travels. The bridge travel is at the rate of 325 feet per minute, hoist 35 feet per minute, and the ultimate limit of the trolley 200 feet per minute. In addition to serving the foundry and the machine shop, the crane is used for stacking castings in the yard and for unloading tubes for the various storage sheds. One man controls the operation of the crane, as well as the trolley. It was built by the Variety Iron Works, Cleveland.

Methods of Molding.

For molding some of the cast sections which include only such accessories as fronts, panels, columns, fire, cleaning and inspection doors and frames, grate bars, chain grate links, shoes, saddles, etc., several novel methods have been evolved, which not only facilitate operations, but likewise have reduced the cost of production. Six of the molds for links for chain grates, Fig. 10, are made in a flask, the pattern being mounted on a follow board. Steel cores are used in the place of dry sand and are coated with a special preparation which permits them to be easily knocked out of the casting. These cores leave a clean hole for the bar on which the links are mounted, and the cost of machining has thereby been entirely eliminated. In addition, the hole is slightly chilled, which is desirable in a casting of this kind.

Inspection doors for mechanical stokers are recessed for asbestos gaskets, the recesses being made by means of tapered dry sand cores, Fig. 9, of circular form made in four sections. The elliptical cleaning doors are also recessed for asbestos gaskets, the cores being merely pressed into the print. When this mold is made on a floor, the recess is made in the cope, and the core is nailed into place. When made on the molding machines, the recessed side is in the drag, and as the core only has to be pressed into the print, all nailing is obviated. The latter method not only increases the daily output, but likewise effects a saving in cores.

In making the molds for the herring bone grate bars up to a size of 4 feet 6 inches, two patterns are made in a flask, the pattern resting entirely in the drag. Those over 4 feet 6 inches are made one in a flask and all molds are gated at both ends that the pouring of the iron may proceed slowly, so as not to break down the smaller sections of the mold. In gating at one end only, the iron must be poured very rapidly and the resulting defective castings reach an abnormal percentage. For this reason two gates are used.

Other Improvements.

This plant replaces the old foundry, which has been dismantled and has been converted into a structural shop. The latter is 310 x 60 feet, and is commanded by a 3-ton crane, having a span of 59 feet. Numerous other additions have been made to the other departments of this plant. A tube storage building, 150

FIG. 7.—CORE DEPARTMENT.

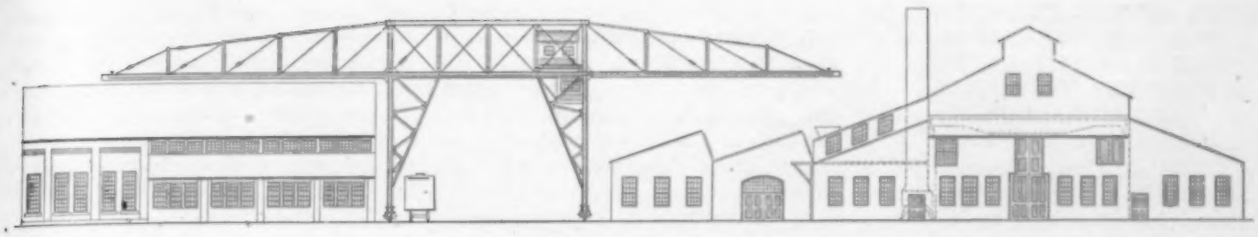


FIG. 8.—YARD CRANE WHICH SERVES FOUNDRY AND MACHINE SHOP.

x 30 feet, has been completed and an addition, 63 x 150 feet, has been made to the testing shop. The crane runway has been extended from this building into the yard a distance of 150 feet, increasing the entire crane travel to 450 feet. The crane has a span of 59 feet, and a capacity of three tons. An addition, 70 x 100 feet, has also been built to the machine shop and a 3-ton electric traveling crane installed, having a span of 59 feet. A new drum shop 120 x 450 feet, of steel construction throughout, has just been completed and is provided with a crane runway 150 feet long, extending into the yard. The two cranes, of 10 and 25 tons capacity each, were installed by Pawling & Harnischfeger, Milwaukee. The crane runway has a span of 50 feet.

The drum shop has been provided with two riveting towers, in which hydraulic hoists raise the drums, which are riveted by bull riveters operated by hydraulic power. The height of these towers is 46 feet and the peak of the building 40 feet, while the distance to the under side of the roof truss is 30 feet 6 inches. The operation of the cranes in and out of the building into the drum shop yard is rather unique. The opening for the crane bridge is closed by a door hinged at the top, which is counterbalanced and its operation is controlled by a hand chain and drum from the inside. Two smaller swinging doors have been provided for the crane chain and for the operator's cage. They swing in and out by impact. The larger doors through which the material for shipment is carried open outward.

Boiler House.

A boiler house, 50 x 132 feet, is being erected, in which five Stirling boilers, of 500-horsepower each, will be installed. They will be equipped with Stirling grate stokers and the steel stack, which is well under way, will have a diameter of 9 feet and will be 200 feet high. The coal storage bin which adjoins the boiler house is of concrete construction, has been provided with a cement floor, and has a capacity of 4,000 tons. For delivering the coal to the stokers, five steel plate coal hoppers, having 8-inch openings, will be installed. They will have a capacity of 16 tons, which is sufficient for a run of 24 hours. The coal is received over one elevated track and over another which is at the ground level, and the hoppers are filled by means of a grab bucket operated by a 3-ton cantilever crane, which has a height to the bridge of 37 feet 10 inches. One 63-foot arm extends over the coal storage bin, while the other arm is 26 feet in length. The center bridge of the crane is 18 feet wide.

The stack shop building, 80 x 480 feet, has been entirely rebuilt, and a crane runway from the yard into the building, having a length of 280 feet, has been recently completed.

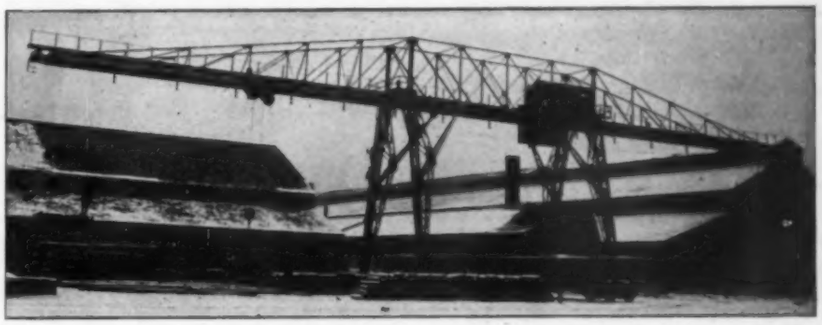


FIG. 9.—YARD CRANE.

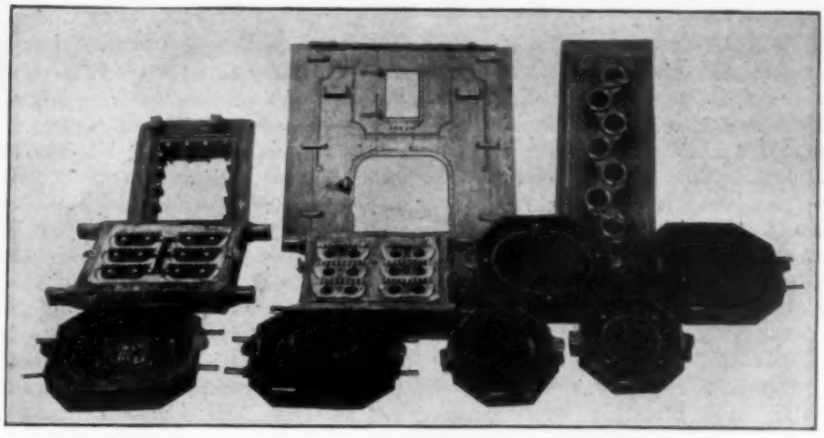


FIG. 10.—MISCELLANEOUS MOLDS AND PATTERNS.

Pleads for Subsidy Bill.—One of the most notable events of the year, in Worcester, Mass., was the board of trade banquet, held in Mechanics Hall Thursday evening, May 2, at which 500 of the manufacturers, merchants, and professional men of the city were treated to a feast royal, not only for the inner man, but also for the thinking man, especially the manufacturer. Two exceedingly strong addresses were made by the Hon. John Barrett, director of the International Bureau of American Republics, and Hon. Leslie M. Shaw, former secretary of the treasury, and now president of the Carnegie Trust Co. Mr. Barrett clearly showed the manufacturers that the trade of the sister nations of our western hemisphere lay waiting for us to take it. Mr. Shaw followed with a plea for government subsidies for the shipping interests, until a transportation system is successfully developed to carry our products to the waiting markets south of us. "It is now or never," said Mr. Shaw.

SOME OF THE RELATIONS OF RAILWAY TRANSPORTATION IN THE UNITED STATES TO MINING AND METALLURGY.[1]

By Dr. James Douglas.

We can best appreciate the part the railroad has played in the industrial progress, made by this country, by comparison with one of our industrial rivals—England, for example. The railroad, as a factor in commercial life, came into existence on both sides of the Atlantic in 1830, when the Liverpool and Manchester railroad ran its first train, and Peter Cooper's "Tom Thumb," the first locomotive built in America, drew a car upon rails out of Baltimore. We have no record of the miles of track in 1830, but several short stretches of railroad in New York, New Jersey, Pennsylvania, Vermont and North Carolina, in 1831, added together, gave a length of only ninety-five miles.

But mining and metallurgical operations were much more active on the little island than on our big continent. When the railroad arrived to assist in reversing the industrial status, the insular position and the configuration of Great Britain enabled her to take advantage of her mineral resources; while our population, scattered even then over almost half our section of the continent, with few canals or no really cheap means of intercourse or transportation, could not have built up any large metallurgical enterprise, no matter what the natural resources might be.

Influence of Railroads on the Iron Trade.

England's production of pig iron was then 677,417 tons but the success of the Liverpool and Manchester railroad created a railroad building mania so acute that before 1840, 299 acts, authorizing the construction of 3,000 miles of railroad had been passed by, or were before, parliament; but the 3,000 miles had not been actually built. The stimulus thus given to the iron trade was, however, such that the production of iron rose in 1840 to 1,396,400 tons. We thus get the first example of the tremendous reciprocal influence which railroads have exerted upon the iron trade.

Here, once started, our progress in railroad building was rapid, for by 1840 we had 2,818 miles of road in actual operation, or more than England. But in 1830, when neither country possessed facilities for inland transportation, England far surpassed us in metal production. There were, as I have said, produced in Great Britain 678,417 tons of pig iron. She mined about 50,000 tons of coal, made 11,500 tons of copper, about 58,000 tons of lead, and 4,400 tons of tin. Since then her railroad mileage has increased to 22,700, her production of pig iron to 9,000,000 tons, her lead production, however, has declined to 20,000 tons, her production of copper has become a negligible quantity, and her tin production has not increased.

Meanwhile our railroad mileage has grown to 212,000, as against 23 miles in 1830; our pig iron production (1905) from 135,940 tons to 22,992,380 tons; our coal from 209,000 to 314,562,880 tons; our copper from nothing to 462,000 tons, and our lead from 10,000 to 322,886 tons.

That England, without railroads, should have occupied so conspicuous a position in the metallurgical world, while we, with a population at that date of only three and a half millions less than that of England, Scotland and Wales, produced so much less, was due to her geographical configuration, and that the distribution of her important metallic and non-metallic deposits. England, Scotland and Wales are included in a long, narrow island, which is so deeply indented by the estuaries of navigable rivers that the average width from navigable water on the west coast to navigable water on the east coast does not exceed 250 miles. And if we except the lead of Derbyshire, all of Great Britain's coal and mineral wealth lies sufficiently near navigable water to have rendered her in early days prosperous without the aid of railroads. The coal fields of Durham and Northumberland are on the seashore, or intersected by the Tyne, the Clyde and the Firth of Forth cut into Scotish coal basin, which extends across the narrow neck from the Atlantic Ocean to the North Sea; and the Welch coal field lies on or near the Bristol channel. The Cleveland iron ores are close to the east coast, and, unlike any of our own great ore bodies, except those of Alabama and Tennessee, are almost in contact with the fuel suitable for their reduction. On the west coast are the rich and pure hematites which give industrial life to Barrow-on-Furniss. The coal measures reach the sea nearby at Whitehaven, Cumberland. The copper and tin of Devon and Cornwall have been mined from time immemorial on an arrow peninsula washed by the Atlantic and the English channel. England would, therefore, owing to her insular position and conformation, have retained her metallurgical prominence without the railroad. Its introduction has been in fact one cause of her relative decline, inasmuch as not being as essential to her growth as to that of her great rivals, the railroad has therefore not been developed with the same energy as in this country and in Germany.

Turning to our own positon, as metal miners and workers, in 1830, the year of the railroad's advent, when the census records were still given by value, we made $4,757,403 worth of pig iron, of which Pennsylvania contributed $1,643,702. Taking Swank's value of pig at $35, the total production of pig was 135,940 tons. Our copper industry did not assume appreciable proportions till years afterwards—the first recorded production being 150 tons in 1846. But the lead mines of Missouri, which had been one of the tempting baits to induce dupes of an earlier day to invest in Thomas Law's Mississippi Bubble, were in 1830, with small contributions from Wisconsin, producing all of the 8,000 to 10,00 tons which we were then making. These regions were sufficiently near navigable waters to be accessible.

If we advance to the census of 1840, the first in which quantities are recorded instead of values, we are struck by the fact that the advent of the railroad does not seem to have stimulated the manufacture of iron here as acutely as it did in England. The production of 135,940 tons increased to only 286,902 tons—an increase of 150,963 tons, while in England it rose from 677,417 to 1,396,400 tons. Though most of the roads were laid with strap rails, T rails were already supplanting them; but none were rolled in this country till 1844.

And the concentration of the iron industry, was not notable, the Alleghanies not having yet been surmounted by an iron road. In that year the 286,903 tons of pig iron were made in 804 blast furnaces, located all over the inhabited country from Maine to Michigan—the average production per furnace per day being only 19.40 cwt. Of these 213 were in Pennsylvania. There were almost the same number of bloomeries, forges and rolling mills, making only 197,233 tons or bars—Pennsylvania producing but 87,244 tons. Minnesota, which now stands first and foremost as an iron ore producer, was still an undefined part of that great wilderness known as the Northwest Territory; but Michigan had been for four years admitted to the privileges of statehood and was a producer of iron, and finished iron

[1]Abstract of an Oration delivered before the Graduating Class under the Faculty of Applied Science, at Columbia University, June 12, 1906, and reprinted from The School of Mines *Quarterly*.

products, using charcoal as fuel. The southern states made iron in small quantities for local use; but New York, New Jersey and Pennsylvania were the most active manufacturers.

Reason of Pennsylvania's Prominence.

Though Pennsylvania was at the head of the list of iron producers, she occupied that position by virtue of her possession of iron deposits within her own limits of such size and richness that they still sustain centers of great local activity. The Cornwall ore banks maintain the credit of the famous South Mountain Range, and hold their own as one of the great iron mines of the country. Their production in 1903 was 401,469 tons, though, with the iron industry generally, they fell off in 1904. There were in Allegheny County, in 1840, 28 charcoal furnaces, producing 6,584 tons of pig iron and 12 bloomeries and forges, producing 28,100 tons of bars. The large amount of finished iron was due to the fact that already the fine coals of that district attracted pig made elsewhere to Pittsburg. Pennsylvania occupied prominence by virtue of her home supply of ore, and Pittsburg was the heart of Pennsylvania's iron trade by reason of her coal. Today Pennsylvania's furnaces make half the iron of the country, but not from her own ores, for in 1905 her furnaces poured forth 10,599,107 tons of pig iron, but her mines produced only 810,000 tons of ore.

The explanation lies in the potency of transportation. Pittsburg possesses coal and coke, Michigan and Minnesota the largest, purest, and, considering their quality, the most cheaply mined ores in the country. It is at present cheaper to bring the ore to the fuel, and to the people who buy and consume the iron, than to take the fuel to the ore and carry back most of the finished product. And the complete revolution effected within the last half century in this and every other great branch of metallurgy has been brought about by the railroad and steamboat. Of the fifty million tons of ore treated in this country last year 34,353,456 came from Lake Superior, and by far the largest shipments were from the Mesabi range, 1,025 miles distant from Pittsburg, where the ores were reduced.

In deciding where it is most economical to reduce ore to metal, the cost of transporting the raw material the fuel and the finished product to the most profitable market are the determining factors.

There are some strange contradictions of this rule, as for instance, the ill-suited locations of some of our large iron works which were started originally near some small iron deposits now exhausted, or on a water power, too trifling to be used today, but which survive as geographical anomalies because the necessity is not yet urgent enough to oblige the owners to wipe out the large capital invested. But our more progressive corporations are taking this radical step, as instanced by the owners of the Lackawanna Steel Co., whose owners have transferred their works from Scranton to Buffalo, while their name alone perpetuates their former prosperous existence in the heart of Pennsylvania. If we assume for instance that at present two tons of Lake Superior ore make one ton of pig iron, and that one ton of fuel is consumed in reducing them to one ton of pig, and this pig iron is used up in the east, then two tons of cheaply handled ore are transferred to Pittsburg, whereas if that ore were reduced at the mine, one ton of fuel, whose transportation, owing to its bulk, is more costly than that of a ton of ore would have to be carried from Pennsylvania or Ohio, and one ton of pig of high value, and therefore commanding a higher freight rate, would of necessity be shipped back to the eastern market. Under either condition four tons of freight must be shipped to lay down a ton of pig in Pittsburg—two tons from west to east, and two from east to west; but the eastbound ore can be handled with less loss and at less cost than coal and coke could be carried west and pig iron east. Therefore, up to the limit of the demand of the eastern market for pig iron, it is cheaper to make it of Lake Superior ore in Pittsburg than to make it on Lake Superior. But the western market is rapidly growing, and new works are being laid out on Lake Michigan, rather than either in the heart of Pennsylvania or on Lake Erie; for both Michigan and Minnesota ore can be laid down more cheaply on the shores of Lake Michigan than at any point in Pennsylvania or Ohio; and though the great central coal basin does not yield a good coking coal, it does produce cheap fuel for converting pig into finished product. In 1905 the shipments of iron ore from Lake Superior amounted to 34,353,456 tons. Of this 84.4 per cent were transferred inland by rail from ports on Lake Erie; the balance, 5,369,098 was shipped to points on Lake Michigan.

As, however, the west grows—and the west is shifting always to points still further west, its demands for iron grow almost more rapidly than the east, and the center of manufacturing will continue to move westward. This tendency we see in the rapid expansion of the only large iron and steel organization west of the Missouri—the Colorado Fuel & Iron Co. While in 1900 its furnaces at Pueblo made only 150,204 tons of pig iron, they made in 1905 407,774 tons. And yet these furnaces depend on long distance freight for their supply of ore. Some of it comes over a haul of 700 miles from southern New Mexico; and much of it comes from Wyoming, and distant points in Colorado. But the fuel supply is near at hand in the Trinidad coal field.

Available Coal Supplies.

We know of no iron deposits in the west comparable in size to those on Lake Superior, but there are many which can be profitably worked. And though within our own territory west of the Great Salt Lake Basin we have no good coking coal, our neighbors to the north can supply it, or we can draw it from New South Wales, which already has shipped coal for railroad purposes to the Pacific coast. From our other neighbor on the south should iron and steel works be started on the west coast, we can draw ore from the large deposits said to lie on the very seashore near Acapulco; for distance is being rapidly obliterated by steam, and by it also let us hope international selfishness and commercial exclusiveness.

The marvelous feats which two generations of engineers, in handling steam and electricity, have enabled us to perform, may not be duplicated by equal progress during the next half century; but it goes without saying that but for our transportation facilities we would not occupy in the world's race the same advanced position we have acquired today, for the very vastness of our country, and the actual distance, from one another and from population of our resources, would have rendered many of them valueless. But, given control of steam, the great size of our mineral deposits and the long distance our continental areas require that we transport material, has inspired our transportation engineers to work on a larger scale than their fellow craftsmen across the sea. We handle longer trains, with larger cars, and as a rule at a much lower rate of freight than they do. Otherwise, neither our miner nor our metallurgist could perform the duty required of them.

Take for instance the cost of transporting a ton of iron ore from Lake Superior to Pittsburg—80 cents from

the mines to Duluth, a distance of 80 miles; 75 cents for 1,000 miles by steamer to Cleveland (though the rate has been as low as 57 cents, and though, when the first shipments were made from Michigan in 1856, the rate was $3.00); then $1.18 from Lake Erie points to Pittsburg, a distance of 135 miles—making the total transportation $2.73 for 1,250 miles, including transfers.

The mining, transportation and smelting operations of our large corporations are on a stupendous scale, but the transportation is as essential an item in the result as the mining and smelting. For the United States Steel Corporation there were handled in 1905 18,486,556 tons of Lake Superior ore, and they themselves manufacture 12,242,909 tons of coke, which must have used up 20,000,000 tons of coal. This coal production is exclusive of 2,204,950 tons mined by themselves alone. For flux they use 4,000,000 tons of limestone. About 3,000,000 tons of freight, therefore, as ore, fuel and flux, must have been transported, half of it for over an average of 1,000 miles, in addition to 10,000,000 tons of finished product for a shorter distance. A total of about 48,000,000 tons of freight were contributed by this single corporation. As it made only 9,940,799 tons, out of 22,992,380 tons of pig iron made in this country, or 43 per cent of the whole, the total tonnage moved for a longer or shorter distance by the iron smelting industry must have been approximately one hundred and nine million tons.

Without going into the economies of railroad rates, I would remind you that the low rates at which are carried these large quantities of low grade freight, on which the very existence of our large metallurgical industries depend, could be given only if supplemented by higher rates on higher class freight. And the very remunerative wages given miners and mill workers, and the high standard of their living, gives the railroad a large proportion of such profitable traffic. For instance, on a railroad with which I am connected, and which depends almost exclusively for its traffic on mines, the proportion of the different classes of freight is approximately as follows:

Ore,	49 per cent.	83 per cent of traffic is carried at a very low rate.
Coke,	16 per cent.	
Coal and Petroleum,	3 per cent.	
Lumber,	8 per cent.	
Copper bullion,	7 per cent.	
Merchandise, fodder, etc.,	17 per cent.	at a higher rate.

There is one more subject bearing on the relation of mining and railroads to which I wish to draw your attention, and that is also statistical. The intimate relation of the railroads to our great mineral and metallurgical industries—iron and steel—is illustrated by the parallelism between the extension of the railroad and the increased production of the metal. In 1840 there were 4,535 miles of railroad in operation and there were made 256,100 tons of pig iron. By the end of the century there were 250,142 miles of track, including double and single, and the production of our 200 blast furnaces was 13,620,703 tons. Fifty-three as a multiplier approximately represents the increase in both branches of industry. Since then the mileage of our steam roads has not kept pace with our iron production, but if to the steam road mileage of today be added about 30,000 miles of recently completed urban and interurban roads, 70 as a multiplier, instead of 53, represents approximately in both spheres of activity the still more intense energy exerted within the last few years. A similar parallelism may be traced between all branches of metallurgical industry. During the last ten years, when copper has been used so extensively in both electricity and architecture in association with iron, one ton of the rarer metal has been used to 83 tons of the more abundant, and this proportion has varied only slightly from year to year.

Proportionate Consumption of Iron and Copper.

If we recede in our comparative study beyond ten years, we find that the quantity of iron in proportion to copper between 1886 and 1892 consumed in this country was much greater, viz., 97 tons of iron instead of 83, to one ton of copper. The increased use of copper in architecture and electricity explains its relatively, as well as its absolutely, greater consumption. But whereas more copper per ton of iron is now used than formerly, less lead is consumed copper generally replacing it in architecture. Zinc has maintained to iron a very steady ratio. This dependence of every metal on every other, of all on coal, and of both coal and the metals on transportation forms one of the chains of relations which link together the elements of our industrial life, as intimately as nature binds in dependence and interdependence all matter and force, not omitting ourselves though we often struggle to liberate ourselves from its clutches.

Mr. Fish, in an interesting review of the operations of the Illinois Central in one of his annual reports, gives the following figures, which are relatively true of all our industries:

Returns to the Public.

"In 1886 of every $100 paid by the public to the company there was returned to the public on or near the line of the railroad, for operation expenses and taxes $61.71; there were paid for fixed charges $22.83, and there were left for dividends $15.46.

"In 1905, on the other hand, of every $100 paid by the public to the company there were returned to the public on or near the line of the railroad, for operation expenses and taxes $74.32; there were paid for fixed charges $13.02, and there were left for dividends $12.66. These dividends include revenue from other sources, in 1886 from the sale of lands and from interest on investments; and in 1905 from dividends and interest on stocks and bonds of this and other companies."

The people at large, therefore, quite apart from the multitude who hold the stock of these great corporations, benefit to the extent of three-quarters of the gross expenditure. And this is substantially true of all our successful enterprises. Of the statistics of the unsuccessful ventures, in which capital loses a great deal of money, we hear little. But the operation of the successful ones are on such a stupendous scale nowadays that the comparatively small amount received by those whom we call the promoter per unit of output, whether in the form of material or in the form of energy, represent those great private fortunes which are a stimulant to some, a source of jealousy to others and of wonderment to all. To many of their possessors they are certainly a cause of keen heart searching for some of them certainly find great difficulty in disposing of their accumulation, and we may therefore assume that they feel acutely the responsibility of its possession, and of wisely administering it. To check the growth in future of their fortunes by legislation is the evident, if not the avowed or understood object of much state and federal legislation. If it can succeed in doing so without checking the development of the enterprises which have created these fortunes, no harm will certainly be done, and many of us will thereby be saved from temptation. But probably the evil will remedy itself, for in making haste to be rich every one has been making corresponding haste in depleting our national resources—cropping and recropping our fertile prairie lands, and not restoring

their fertility by manure—emptying our mines more rapidly in a decade than old Europe has emptied hers in as many centuries—cutting down our forests, and leaving the refuse lumber a prey to fire, and covering our land with railroads by which these extraordinary results have been brought about. We stand aghast at our own handiwork, and wonder what will be the outcome. The outcome will inevitably be of more modest pace and a saner frame of mind as our resources become gradually exhausted and some men will have to work harder for less pay.

But it will not be the mechanical engineer, or the mining engineer, or the chemist, who will suffer; for as we begin to feel the pinch of want and really appreciate that our resources are not illimitable, and that we must stop wasting and use some economy we will be obliged to look to you to save us. By-products have been a byword among us heretofore. Ere long they will be here as elsewhere the salvation of our industries, and you will be the saviours, for to you the nation will look to maintain the supreme position it has secured. She has attained it by the most energetic use of nature's resources. You must do it by the introduction of economies we now almost despise, and by inventing substitutes for material which is now cheap and abundant, but will be ere long scarce and costly. We already see a symptom of the coming change, an unconscious prophecy as it were of future development, in the increasing substitution of concrete, the ingredients of which on the surface of the earth are substantially inexhaustible, for the metals which will soon become rare, and in the generation of heat by the conversion of force instead of exclusively by the combustion of carbon.

You have therefore before you for solution problems of most momentous importance, not only to this country but to the world at large, for thank heaven, selfishness may build tariff walls against trade and folly, or ambition embroil nations in war, but no one has yet been able to confine the divine prerogative of free thought or of free speech by those brave enough to use it, and that I am sure you will be.

The Pennsylvania Steel Co.'s rail mill at Steelton is making heavy productions of rails lately. Some weeks back its tonnage ran very high, one twelve-hour turn breaking a record. The whole plant is being run at a high rate.

STEAM JET VS. FAN BLOWER.

Careful experiments, conducted some years ago at the New York navy yard, to determine the best form of steam jet for producing forced draft in launch boilers showed that from 8.3 to 21.2 per cent of the steam produced by the boiler was consumed by the jet. In a jet which had a hole only one-sixteenth inch in diameter, and which was the most economical of all, the steam used was one pound in two minutes. The amount of steam required by a fan blower is under ordinary conditions from a fraction of 1 per cent up to a possible maximum of 3 or 4 per cent in small boiler plants or with uneconomical apparatus; and practically the whole of this expenditure of power, in the form of exhaust steam, may be subsequently utilized for heating or similar purposes.

The case of a steam jet may be briefly summarized thus: It has the advantage of costing very little to put in and keep in repair. It's disadvantages are: First, it requires a very large amount of steam to run it; second, it introduces a large amount of water or steam, all of which has to be heated and carried up chimney; third, unless very carefully managed there is a large development of carbonic oxide, hydrogen and marsh gas, due to dissociation of the water, which has a tendency to carry off a great deal of heat in the stack; fourth, the intensity of draft producible by this means is distinctly limited; and, fifth, and by no means least, the noise incident to its use is at times almost intolerable.

The late Mr. Eckley B. Coxe thus expressed himself: "The fan is most expensive to install and may cost more to keep in order, but where the arrangements can be made to utilize the heat in the stack gases it is more economical so far as heat units are concerned. It has one great advantage, it is possible to at all times obtain the exact blast necessary to produce the best results in the furnace, which is very important.

"It is a peculiar function of a fan blower that instead of always delivering a fixed volume of air, regardless of requirements, it automotically increases the volume as the resistances are decreased. On the other hand, if the blower be in operation with a fairly free outlet, in excess of its capacity area, and that free area be decreased, the pressure produced will immediately rise, thus tending at once to overcome the increased resistance. Therefore, if a certain maximum pressure is known to be required, the fan may be so speeded as to give this at such times as the conditions demand; while at other times, when less pressure or volume of air is required proper manipulation of the blast gate will economize power.

A PORTABLE CORE OVEN.

Many attempts have been made to design an economical and at the same time efficient portable core oven. Most cores are baked in heavy brick structures which take up an unduly large amount of space, and which cannot be moved or shifted as development in the department requires more space and for changes in the general arrangement of the plant.

One objection to some types of ovens is that they are not adapted for

FIG. 1—FRONT VIEW OF PORTABLE CORE OVEN

drying long cores such as are made on core machines, as the clearance which must be left along the curved edge of the shelf reduces the area that can be covered with core plates. The objection to all ovens of the stationary shelf type is that the core plates have to be handled into and out of the oven through openings, which interfere with the draft or heat conditions and thus retard the baking of the cores in the oven.

Figs. 1 and 2 show two views of a drawer oven which is self-contained

and economical. It is equipped with four drawers, supported by rollers at the back and by pipe guides at the front. The drawers are removed from the oven by slipping a pair of handles into the pipes shown in the front, lifting them slightly and running them forward by means of the wheels on the inside at the back of the shelves, the action being much like that of a wheelbarrow. The shelves are self-sealing, in that when they are drawn forward a plate closes the opening, so that the baking of the cores on the other shelves goes on without interruption. The shelves are shown open in Fig. 1, and are drawn to different distances, so as to illustrate the variety of cores which can be baked in an oven at one time. The large cores on the lower shelf are 7 inches in diameter.

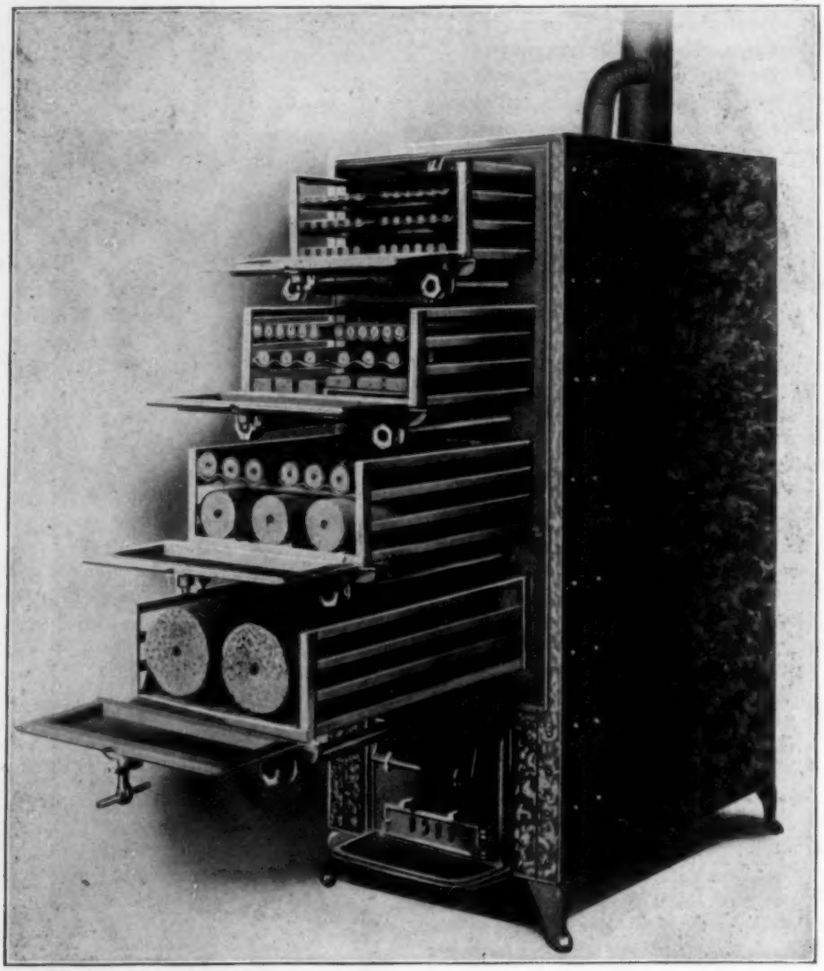


FIG. 2—SIDE VIEW OF PORTABLE CORE OVEN, SHOWING DRAWERS EXTENDED

This oven was run for an entire day on one bucketful of fine coke or breeze, swept up in the coke bin. The consumption of fuel in an oven of this kind would naturally be less than the stationary types, as the space is all utilized to the greatest possible extent, there being no ducts or passages in which radiation takes place.

The fact that the fronts of the doors drop down as shown permits the core plates to be taken out easily. These ovens can be distributed about the core department, thus minimizing the distance the core makers have to walk to put their cores in the oven, and a rearrangement of the department can be effected very easily, as the portable oven is no more difficult to move than the core bench.

In an experimental run the temperature was found to be 450 degrees in practically all parts of the oven, and this temperature was easily maintained the entire day on the amount of coke already referred to.

One point in this oven to which especial attention is directed is the provision for supplementary shelves dividing the main drawers into divisions. As shown, the two highest drawers are divided into three shelves each, the next into two and the bottom one is arranged without any supplementary shelves. The facility with which these different divisions can be put in will enable the operator to dry any size of cores readily.

This device was designed by George H. Wadsworth, Cuyahoga Falls, who has applied for patent on the same, and is manufactured by the Falls Rivet & Machine Co., Cuyahoga Falls, O.

Want American Tools.—A report from Consul-General B. H. Ridgely at Barcelona states that the demand for high-class American machine tools in Spain is steadily increasing. He says: "Although there are no exact statistics, it is likely that at least $200,000 worth of these tools reached Spain from the United States during 1906, and at present there is complaint of the prospective slow delivery of recent orders. All sorts of high-class machine tools are required, but American agents here have little demand for those of inferior and cheap quality. These are abundantly furnished by Germany. It has also been intimated that in some instances German tools unmarked with the name of the country of origin have been sold as American products. Incidentally, it may be said that there is no Spanish law or treasury regulation which requires imported merchandise sold in this country to be marked with the name of the country of production; and if American exporters think such a law or regulation is advisable, they ought to make representations accordingly to the government at Washington. In many instances such a regulation would certainly be in the way of a disadvantage to some of our most active competitors."

Ordered Plant Sold.—The Superior court of New Haven, Conn., has ordered the plant of the National Wire Corporation, of that city, to be sold at auction. This action was taken in response to a petition by the receivers of the corporation, H. Stuart Hotchkiss and Frederick B. Farnsworth, who represented that the sale would be the best solution of the financial difficulties of the company. Bids are to be opened May 30 and are to be presented for the approval of the Superior court May 31.

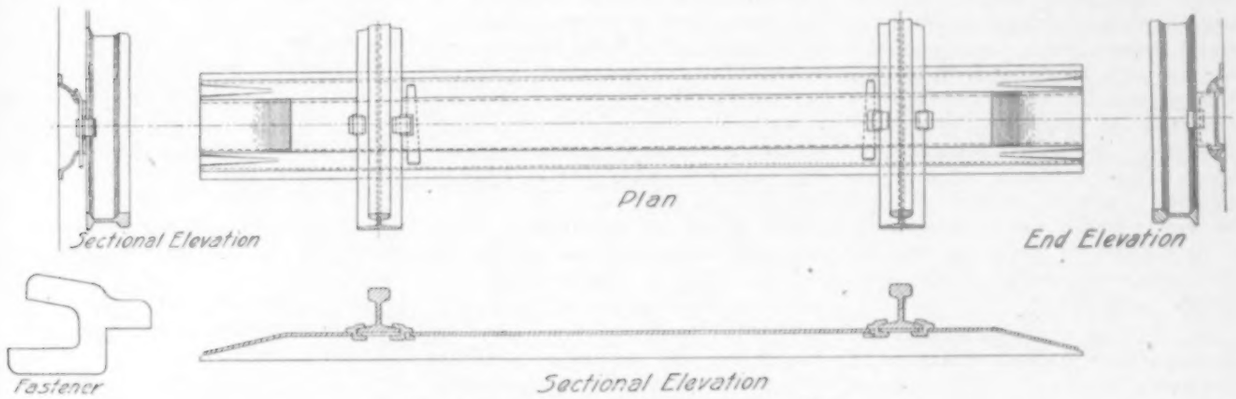
The Cleveland branch of the National Metal Trades Association has moved into a new suite of offices at 310-311 New England building. The branch has been located at offices 307 and 316 in the same building.

THE WILSON BOLTLESS, LOCKING STEEL TIE.

The accompanying illustrations indicate the features of a new steel tie designed by Walter J. Wilson, of Homestead, Pa., for which advantages are claimed, particularly in those respects where other steel ties have been criticized. The design and various parts are patented, and as the tie and all its parts are of rolled steel of simple shape, permitting cheapness of manufacture in any weight and length, it is presented as having commercial advantages to a large degree.

The especially unique feature is in the method of fastening the rail. Bolts which have been criticized as liable to shear off have been eliminated, and in their place the fastener shown has been designed. The fasteners are separate pieces, interchangeable, set in sockets in the ties with large bearing surfaces to take the tensile and shearing strains and locked in place by the simple wedge action of driving a key. The key is then clinched. It will be seen that there is a considerable reduction in number of parts, as for instance in bolt nuts, which have more or less a tendency to work loose. In contrast to the condition of loose bolts it is claimed that even though the wedge should ease off, the track could not spread.

From the standpoint of roadbed this tie is adaptable to any form of ballast; is self-bedding and with its concave form and large bearing surface should not creep. Where desired the rails can be insulated with fiber in the ordinary simple manner. The tie can be rolled in varying lengths from 8 to 18 feet long as required for switches or crossings, and where guard rails are laid special fasteners are provided.



THE WILSON BOLTLESS LOCKING STEEL TIE.

The Schofield Construction Co., of Philadelphia, has begun work on a large plant at Marcus Hook, near Chester, Pa., and will rush operations.

BOOK REVIEWS.

Principles of Copper Smelting, by Edward Dyer Peters. New York. Hill Publishing Co. 6⅛ x 9⅛ inches. 569 pages. Illustrated. Cloth. Supplied by THE IRON TRADE REVIEW for $5.00.

The author needs no introduction to the student of copper smelting if for no other reason than his previous book on "Modern Copper Smelting." The text of the present work is in most inviting style, being intelligible to one who has only a rudimentary conception of chemistry and at the same time so clear and to the point in its explanations that it is very good reading for those who are serious students of the industry or those whose knowledge of the technical and theoretical side has become a little dim. Particularly would it seem to be a book worthy of recommendation to the large class of investors anxious for some knowlege easily obtained of a process in which they have an interest.

The principles and simple chemistry of roasting and smelting ores are presented with examples taken from actual practice to illustrate the point in question. The necessity for the different treatment of different ores and just why the various constituents must be so handled is clearly brought out. Roasting and smelting practice as it exists in its general classifications is described and arithmetical illustrations are added. Costs are given in detail. The matter on general practice is followed by a more detailed description of the different forms of smelting, including blast furnace and reverberatory and the smelting of pyrite.

Stress is laid on the importance of slags early in the text and later a chapter is devoted to a practical study of slags. The considerations attaching to the formation of the matter, its purpose and treatment are embodied in a chapter, as is also a description of the production of metallic copper from the matte. The general industry of copper refining from a commercial standpoint, and from the standpoint of progress and practical working problems is commented upon and criticized in a valuable way by the author, followed by a chapter on furnace building. The chapter on furnace building is not a technical discussion of dimensions but one of general principles involved.

For those who desire something of the strictly technical matter the thermo-chemistry of the various steps in the process is given in detail, the chemical reactions accompanying the different heat changes. One of the most interesting and valuable portions of the text is the closing shapter which deals entirely with specific commercial problems and the cost of production, of raw product and of marketing as presented, should prove very desirable information for a large class of readers.

The Theory of the Steam Turbine, by Alexander Jude. Philadelphia. J. B. Lippincott Co. 6 x 9 inches. 288 pages. Illustrated. Cloth. Supplied by THE IRON TRADE REVIEW for $5.00.

This book is intended for the advanced student of hydraulic and steam engineering who wishes to broaden his engineering knowledge to include the steam turbine. The fundamentals with which the author begins are laws of hydraulics as applied to various forms of turbines and involving theories and mathematical calculations well known to the student, but unintelligible to the uninitiated. It is therefore not for the casual reader who has become interested in the steam turbine as a matter of general interest. Having made this beginning the author differentiates between the various forms of turbines and further points out wherein the theory of the steam turbine departs from and requires a different conception than the hydraulic turbine,

which leads into a short historical sketch of the various types fixing in the mind of the reader the various propositions developed in the fundamental principles presented.

The properties of steam are thoroughly dealt with, particularly with reference to its velocity under the variety of conditions imposed by the principles of turbine action, including resisted and unresisted flow, and the centrifugal effect of steam moving in a curved path. This is presented in the strictly mathematical form which is characteristic of the work, and which calls for the serious study of the class to whom it is offered. The types of turbines from a detailed mechanical standpoint are clearly defined, showing the relation between the several designs and the action of the steam in each particular form of machine so that the shape and location of nozzles and vanes are given a logical origin. This matter naturally precedes a very valuable chapter on "Practical Turbines" wherein the author makes plain the numerous pitfalls to be avoided in designing and reviews previous experiences that have resulted in failure.

The efficiency of the turbine from a theoretical and practical standpoint is thoroughly dealt with. The influence of various forms of parts upon the efficiency and the different results obtainable with different types are worked out mathematically and illustrated by arithmetical examples. The latter half of the book is devoted to a technical discussion of the construction and operation of turbines and is unusually complete both in theory and illustration. Valuable tables, diagrams and illustrations may be found throughout the text, and in the appendix.

The industrial department of the Rock Island-Frisco lines has issued a 160-page book called "Opportunities" which is calculated to be of great service to any manufacturer or business man in search of another location. This book contains a concise write-up of each town and city along the 13,500 miles of railroad embraced in the Rock Island, Frisco and Chicago & Eastern Illinois lines, and in parallel columns on the same page with the description of the community, is given a list of the existing openings for business houses, factories, mills and industries of all kinds. Any foundryman, iron-worker or manufacturer of machinery interested in changing his location can secure a copy by addressing M. Schulter, Industrial Commissioner, Rock Island-Frisco lines, St. Louis, Mo.

SOME COMMERCIAL FEATURES OF STRUCTURAL ENGINEERING.[1]

By Emil Gerber.

The time-honored definition of engineering is "the art of directing the great sources of power in nature for the use and convenience of man." In this age of commercialism in the United States, where the dollar is the chief aim of most men, a new definition has been promulgated by an enneer of ability and prominence, viz., "Engineering is the art of making a dollar earn the most interest."

The old definition is perhaps the more comprehensive and elegant, but the latter is a forceful expression of the times which demands recognition, and a combination of the two may not be amiss, viz., "Engineering is the art of directing the great sources of power in nature for the use and convenience of man in the most economical manner consistent with the object in view."

The design of monumental structures and ornate buildings seldom falls to the engineer. But even in such structures the engineer is called upon, and rightly so, to make the plans for the prosaic but necessary backbone and ribs on which the more beautiful features depend for support and stability.

The more general field of engineering, however, lies in the homely but useful structures on which our everyday business, conveniences, necessities and pleasures depend; and on which beauty, not to say ornamentation, is of a secondary character. I do not wish to say that the engineer should have no regard for beauty, but to emphasize that the primary object of most engineering structures is utility; and it is to this phase I shall more particularly confine my remarks; and to this phase also is the most applicable that portion of the definition of engineering relating to economy and the art of making a dollar earn the most interest. When a new problem presents itself, therefore the first question should be: "Is the object sought worth the expenditure in a broad sense?" If it is a purely economical proposition, the question narrows to "Will it pay in dollars and cents."

Mere convenience is not a commercial reason for doing a thing unless by such convenience a dollar can be saved directly or indirectly. Many enterprises have failed to pay because the designer spent much money on convenient things which made no return. It is sometimes even good engineering to make things inconvenient to guard against objectionable or expensive practices.

The general worth of the proposition being established, the details of the design must be worked out, and in this detail the engineer finds his opportunity to show his ability. Engineering is a mass of detail and he who grasps detail in the most efficient way in his young days will be the man who can master the larger problems most ably in more mature years.

A careful study of precedents is essential in these days. "There is nothing new under the sun" is becoming more nearly true every day. I do not wish to detract from originality, but indifferent originality is more expensive and less creditable than good imitation, and the success of the engineer is directly proportional to the success of his work and to the lowness of its cost. Neither should precedents be followed blindly, but the simplest and most direct means to the end should be sought and used. And simple things can often be learned from very humble sources.

I once had occasion to make some borings in ground submerged under fifty feet of water and to bring up samples of the material encountered. Quick and approximate results were desired. It was easy to sink a pipe by means of a jet of water into the ground, but it was another matter to get the samples. The pipe had a reducer and nipple at the end and a valve, which could be removed easily while sinking and put in place when sampling was desired. One of the men suggested the use of a large marble which could be dropped down the pipe when the proper depth had been reached and removed with the sample when the pipe was withdrawn. The entire stock of suitable marbles in the little town was brought that night for one cent each, and for a week a single marble did the work admirably.

The conditions to be met must be carefully weighed, and while we should provide for all reasonable contingencies, it is often better engineering to neglect trivial things which may be possible, but either not probable, or not troublesome, and let time take care of them, than to spend a lot of money in guarding against them in advance.

I have in mind a bridge in which an approach span was founded at the bank end on a block of concrete placed on top of a newly made embankment fifty feet high. The bank of course settled, very rapidly at first and less so as time went on. In the fifteenth year of its existence, this span

[1] A paper read before the Engineers' Society of Western Pennsylvania, March 5, 1907.

settled one inch at the bank end against several feet the first year. The engineer in charge in this fifteenth year criticized his predecessors' design of the foundation, saying it should have been carried to rock, which was about 120 feet below the rail, so that this settlement of one inch might have been avoided. The cost of such a solid foundation would have reached $100,000, if not more, whereas the existing foundation plus maintenance for the fifteen years was only a small part of that sum. Furthermore, the yielding of the foundation with the settlement of the bank made the approach span a self-adjusting incline requiring infrequent attention, while the solid foundation would have had no such elasticity and would have required daily attention to keep the track supported as the bank settled.

It is perfectly proper to design each floor of a high building for a maximum load, but it would be a waste of money to design the lower story columns for the sum of all these heavy loads.

Allowances for the Future.

Reasonable allowances should be made for future developments, but we are seldom justified in looking ahead more than twenty or thirty years, for changes come so rapidly that the uses for which a structure is erected today may demand entirely different accommodations in a generation. Few of the iron bridges have served for thirty years, and some notable early steel bridges have been renewed in a little over twenty years. These bridges as a rule did not wear or rust out, but the loading increased with such marvelous rapidity that they could not safely sustain the heavier loads to which they were liable to be subjected. Steel frame office buildings date back scarcely a quarter of a century, yet some of them are being taken down to make room for higher or more convenient structures. As for mill buildings, the duration is still more uncertain, though the life of either might have been indefinite under original conditions.

Many of our great, magnificent railroads could not have been built when they were, and the new country would have been undeveloped for many more years, had the designing engineer spent any money not absolutely necessary for immediate uses. As it was, capital required abundance of faith, when it was invested, in building as cheaply as possible the pioneer railroads of the great West, which paid no dividends for years but are now yielding a rich harvest. And who will say that because a community has not enough money to build a bridge to carry 100 pounds to the square foot, it must continue to ford the stream rather than build a 60-pound bridge which it could pay for.

We can afford to pay 50 per cent more for a structure that will last just thirty years than we can for two structures that will last just 15 years each; $1,000 saved on a structure is worth, at five per cent interest $4,320 towards renewals in thirty years.

In work involving articles of well-established lines of manufacture, or the use of equally tried processes, it is always advantageous to consult freely with the manufacturer's or contractor's engineers. Such men have probably encountered the problem to be solved, in some form or other, many times to our one, and know its difficulties, weaknesses and anomalies, and have eliminated many fallacies that look good to the eye but are large illusions. They know also what their machinery can do well and cheaply, and what it cannot do at all, and details which have been worked out by them may at times look peculiar, but be the essence of economy and utility. These men may have hobbies of their own and may sometimes figure a little close, but they are sure to have eliminated the bad for their own good, and a comparison of the experience of several such men along similar lines will enable one readily to winnow the grain from the chaff.

Advantage of Standard Designs.

Some years ago the English army required a bridge in Egypt across the Niles at Atbara. The home engineers, accustomed to special designs for each case, even down to making special rolled sections when fancy suggested, did not promise the bridge at an early enough date and American competition was invited, on American plans and methods, using sections which were quickly obtainable; the only stipulations being the loads to be carried, quality and stresses of material, and time of delivery. The American contractor built six or seven 140-foot railroad spans within two months, while it would have taken the English nearly a year. The bridge was erected in relatively equally short time by methods familiar enough to the contractor but unusual to the English engineers.

When the detail plans and specifications are being made, the best work that the occasion requires should be called for, but care should be exercised to eliminate the unnecessary and notional both in material and workmanship.

At one time American manufacturers were able to sell locomotives to England for use there for less money than the home factories could. On examination, it developed that it was not altogether because the American could produce metal and workmanship cheaper, but also because he omitted much needless work such as finishing surfaces which were just as serviceable in the rough and painted, thereby not only reducing first cost but also maintenance charges.

The cost of steel bridges to carry the same load over the same length of span varies widely according to the ideas of different designers, while the service and life of the structure is the same. Even when such spans weigh the same, there is often a great difference in cost due to the relative degree of refinement on workmanship and material required, without adequate return for the higher cost.

The elimination of non-essentials is not only a saving of money in first cost, but it usually saves time in completion of work and it is needless to elaborate on the saying that "time is money."

The requirements for a railroad bridge are of a higher order than those for an ordinary highway bridge, and office buildings and mill buildings are each in a class by themselves and differ from bridges, and it is not good business to attempt to make all classes of work to one specification.

The specifications for structural steel presented today are pretty much alike and conform to what the mills can produce readily and regularly, but occasionally some one asks for some special requirement for ordinary uses, and while ultimately he may get what he asks for at no higher price, he usually has to wait much longer than for standard material. If steel is rolled and does not meet the special requirements, but is of standard quality, there are plenty of people who will take it at once and the replacement consumes weeks of valuable time. Meantime the interest charges on the money already invested run up.

Design of Details.

In the design of the details of structures, there is as yet no such uniformity as in material. The general plan or layout must, of course, fit the problem, but the details could be much improved in the line of uniformity and in making as much duplication of parts as possible. Bridges slightly skewed cost more than square ones of a length equal to the gross length of skew spans, and trapezoidal buildings can genrally be so divided that most of the connections are at right angles and that there are many pieces alike.

Pieces that are alike should be marked alike, so that the commonest laborer can get with the least labor the piece that is required next. Office convenience in more readily checking pieces with different marks should not overrule the greater simplicity in all subsequent operations of common marking. The use of numerous sections in one structure is a frequent objection. The assumptions for calculations determining sizes are not so exact that we cannot deviate a little when it comes to a question of which of two similar sections to use, as for instance a heavy twelve-inch beam or a light fifteen. The more numerous the sections the longer it takes to get the material, for the mills roll each section only at considerable intervals and carry very little stock material. Odd sections should be specially avoided, as the interval between rollings is greater, and to know what is odd one must keep in close touch with mill practice.

The above is particularly applicable to minor fittings, such as brackets and shelf angles, stiffeners and the like, the size of which depends less on stress requirements than on other practical considerations.

Calculation of Rivets and Pins.

The calculations of rivets and pins are based on eminently safe theory, but it can hardly be called correct theory except so far as it is safe. When, therefore, connections of six or more rivets differ from each other theoretically by one rivet, or say 15 per cent, we need not hesitate to make them alike. Floor beams have been known in railroad service to have flange rivets spaced 15 inches centers throughout their whole length and not fail. These floor beams were improved by adding twice the original number of rivets, thus making 5-inch spaces, which was theoretically not enough, but the engineer argued correctly that if 15-inch spacing did the work 5-inch spacing surely would. There have been other floor beams, I-beams with cover plates, doing good service with no rivets connecting cover plates and beams between stringer bearings, which, of course, is theoretically correct.

Similar reasoning can be applied to diameters of pins. In two important bridges the pins, figured by standard rules for bending, were subjected to fiber stresses as high as 250,000 pounds per square inch and yet were perfectly straight and sound.

I do not advocate changing pin and rivet theories, but merely wish to point out that some latitude is permissable.

Duplication of parts saves both time and money directly, and it pays well to have the draftsman study these matters carefully and thereby save the time of many men in shop and field.

Close fits and fine finishes, where not required for direct service or appearance in conspicuous places, are expensive and to be avoided. There is nothing more annoying to the erector than tight fits in field joints, requiring heavy hammering to get them together.

Specifications.

The making of specifications by the assistance of scissors is not uncommon, and has some commendable features, but it should be done intelligently and a waste basket should be at hand as well as a glue pot. Results should be aimed at rather than processes, unless it is important to eliminate known bad practices. It is better to say in such cases what shall not be done rather than what shall be, as the contractor may have ideas of methods that are superior.

A prominent engineer once gave the two objects of specifications to be, to describe the results desired, and to keep the contractor from wasting time on trying to make cheap but doubtful material and methods fill the requirements. Specifications should cover every point of importance clearly, but they should be as concise as possible. It would hardly seem necessary to say that cement shall be delivered at the site in manila paper bags containing about 80 pounds each and tied with hemp strings, when such a proceeding is common practice and wholly immaterial.

When the contract for work has been let, the end is not yet. The work must be made to plans and specifications and requires the eternal vigilance of the inspector. It has been said that no contractor can be trusted to do an honest piece of work. As I am in the service of a contracting corporation, it is of no avail for me to argue the point, except, that while practicing as an engineer, I met many honorable contractors and it is my experience that confidence begets confidence, while suspicion creates antagonism and trouble.

Engineer and Contractor.

It may be pertinent to point out a few features of the relations between the engineer and contractor. The contract specifies what each party is to do, and though the engineer is usually made the arbitrator of all disputes, and the contract gives him many arbitrary rights, this does not warrant him in exacting anything not distinctly agreed upon or reasonably implied, or in making changes without corresponding consideration to the contractor in money or time.

To the credit of most engineers it must be said that they are fair-minded, and if they will put themselves in the contractor's place and be fair, they are pretty sure to get a square deal.

Inspectors.

To come back to the inspector, who deserves much consideration for the trying position he is in. He should be a man of experience, though frequently he has just graduated from college and knows about what all of us did at that stage of our career. An experienced inspector should be given plenty of discretion as to how he enforces his specifications. A wilful violation, of course, cannot be tolerated, but mistakes are made under the utmost vigilance and there will be accidental defects in material, and some remedy must be applied to get over the difficulty. If the inspector is really interested in getting his work done right and promptly, he will assist the contractor in devising the least expensive way out of the difficulty and still secure for his employer substantially what he pays for. A good inspector is a help to a contractor as well as to his employer and the men will point out errors to him so they may remedy them as he wishes rather than conceal them. But if the inspector is allowed no discretion and must live up to the letter of his specifications no matter how trivial the departure, there is sure to be trouble, extra expense, and delay. The owner is entitled to his pound of flesh, but he should not shed unnecessary blood in getting it. The inspector's decisions should be prompt, many references to headquarters delays the work to the detriment of both contractor and owner, and such references gradually undermine the standing of the inspector. As the right is reserved that the inspector may be present in any part of the works at any time, so it becomes his duty to be present at any operation he desires to see, be it early or late, that the work may not be delayed on account of his absence.

Much stress is put on tight rivets, so much that some inspectors go about with a piece of metal in one hand and a hammer in the other to detect the slightest possible jar, hammering the rivet till it is loose if necessary, to prove a suspicion of looseness. It can be shown that few rivets of any length ever completely fill a hole, and such rivets can be hammered loose by a little persistence. The very theory of proportioning rivets assumes that they are loose, for they are figured for bearing and shear, the full extent of which cannot come on them till the pieces they hold together are so loose that they can slide on each other. The real work of rivets is to hold pieces together so tight that

the friction between them is enough to make them act as a unit.

Loose rivets are not advocated, but when a rivet is so tight that looseness cannot be detected by sound or the bare finger with one or two taps, it is tight enough for all practical purposes wherever it may be located.

Change of Details.

A source of expense and delay which is seldom considered is the changing of plans in minor details while the work is in progress. Changes, no matter how small, are always expensive in money and time, and they lead to those extremely objectionable bills of extras which the contractor usually makes too large for the owner but not large enough for himself. All changes, even if trivial, should be specified in writing; in this way many of them will be found unnecessary. Large changes, of course, from their magnitude, force attention on themselves and are properly considered.

The entire cost of any structure is not always what the owner pays for it, but what has been spent on it altogether, for material, labor and interest charges on capital investment, which brings no revenue during construction. The latter is seldom figured. The owner should ordinarily pay all these charges, together with a profit to the contractors, but sometimes the contractor unwillingly contributes a share of the cost and gets no profit. So far as this loss is his own fault, he bears it as bravely as he can, but if it was inherent in the character of the work or due to unusual exactions during its execution, he will tell his story in very concise language the next time he bids on similar work for the same engineer by the figures of his tender. His estimate is based on a number of elements of which cost of material and average cost of labor for similar work are reasonably certain elements, while general financial, labor, shop and climatic conditions, and the personal equation of the engineer in charge are variables which differ for each case but must be considered.

In the long run everyone pays a fair price for what he gets, and if an engineer, in asking for proposals on work similar to work previously executed by him, receives a high bid from his last contractor, it is well for the engineer to investigate the reason, lest he is himself at fault in not having fully recognized the commercial conditions of his project. It is no credit to an engineer to boast that no contractor under him has ever made money. To such a person, the cost will be a continually increasing one, and the owner, especially if he builds frequently, soon learns what current prices are and expects to get them, and if he does not he seeks and soon finds the reason.

If newspaper reports are correct, the proposed Panama Canal contract required the investment of considerable capital by contractors, which the government could itself furnish much cheaper and hence the contract was withdrawn rather than pay the price. Whether this is true or not in the Panama canal case is immaterial; it illustrates, however, that requirements may easily be made of contractors, against which the latter must protect themselves, which the purchaser has to pay for ultimately without getting much in return. Penalty clauses and guarantees are frequently of this boomerang variety. A case in point is the following:

The government let a piece of work and stipulated that ten per cent of the purchase price should be retained for ten years as a guarantee for the durability of the work for that period. The contractor figured his cost plus a fair profit, then added the amount to be retained and this sum constituted his bid. He executed the work, made his profit out of current payments, and at the end of ten years collected his guarantee fund with interest as an extra profit.

The whole subject was admirably covered in a brief letter by the chief engineer of an important railroad who said: "We want as good bridges as any one and don't want to pay a cent more than they are worth, and if there is anything in our requirements that adds to the cost without producing corresponding value, please point it out to us."

Officers are making inquiries along the same line, although the question is not so concisely put, and still others have mastered the problem and are getting good work, in quick time at a minimum cost.

What has been said may be criticised as a recommendation to accept mediocrity in engineering structures and looseness in business methods. It is not so intended, but rather to point out some of the things that have to be paid for in the long run, which are frequently not worth what they cost. The fundamental principle of all business is common sense, and the engineer who has plenty of this, and is alive to the commercial side of his problem, as well as the technical side, will know where to draw the line between what is worth paying for and what is not, and will be able to direct the great sources of power in nature for the use and convenience of man in the most economical manner consistent with the object in view.

The work of excavating for the extensive machine shops of the Lackawanna Railroad Co., at Scranton, Pa., has been begun.

ACTIVE COKE CONSTRUCTION.

The Harbison-Walker Refractories Co., Pittsburg, in the past few months has secured contracts involving millions of silica, clay and quartzite brick for coke oven construction in the Connellsville and adjacent regions. The brick company will shortly complete its shipments to the Grindstone No. 3 works of the Pittsburg Coal Co., consisting of 252 ovens, and will then begin on the new 350-oven plant of this company at the Grindstone No. 4 at Row's run. Several million brick will soon go to the new 278-oven plant at Ernest, Indiana county, Pa., for the Jefferson & Clearfield Coal & Iron Co., and for repair construction to the several plants of the affiliated Rochester & Pittsburg Coal & Iron Co. The Ellsworth Coal Co. of the Lackawanna Steel Co. is using Harbison-Walker brick in the 250 ovens and flues it is building at Ellsworth, Pa. The Republic Iron & Steel Co. is erecting 95 additional ovens at Republic, Pa., of this material; the Champion-Connellsville Coke Co. is building 40 ovens at Brownsville, Pa., and the Georges' Creek Coal & Iron Co. of Underwood, W. Va., 25 ovens. The La Belle Iron Works will use these brick in the block of modified beehive ovens it is building at Steubenville. Among the noteworthy contracts for Pennsylvania-made coke-oven brick is one recently completed for the Dawson Fuel Co., Dawson, New Mexico, a subsidiary to the Copper Queen Consolidated Mining Co., of that city. This covered 400 ovens and flues, the brick for which was shipped from the Layton, Pa., plant of the refractories company. In the two years of new construction ending this fall, the Harbison-Walker people will have shipped from its Pennsylvania works the brick for close to 5,000 ovens, covering the requirements of new ovens for the H. C. Frick Coke Co., Washington Coal & Coke Co., Cascade Coal & Coke Co., Shenango Furnace Co., Hostetter-Connellsville Coke Co., Vinton-Colliery Co., West Virginia Coal Co., Midland Steel Co., Connellsville Basin Works of the Central Iron & Steel Co., Fayette Coke Co., Century Coke Co., and a number of others. From its works in Ohio and Kentucky in the vicinity of Portsmouth a very large number of ovens have been shipped to the southern West Virginia and Wise county fields, and at present several large contracts are on hand. This strong demand for construction material clearly indicates the growth of the coke industry in the last two seasons.

The Sharon Foundry Co., of Sharon, Pa., has abandoned its iron department and hereafter will devote itself to the manufacture of steel castings. The iron equipment is for sale.

NEW PROCESS

In Canadian Steel Mill Ready to Operate—Industrial News.

(Special Correspondence.)

Toronto, Canada, May 9.—The two 15-ton Bessemer converters, which have been under construction at the plant of the Dominion Iron & Steel Co., Sydney, N. S., are complete, and are undergoing a preliminary trial. They will be in regular operation in the course of a few days. The method is what is known as the duplex process, which is stated to be in operation in only one other plant in America, that of the Tennessee Coal Iron & Railroad Co. By this system the steel has to pass through the open hearth furnaces as well as the Bessemer converters in the course of its manufacture. The great advantage claimed from the new plant is the rapidity of the process, it only requiring five hours to turn out the finished product as compared with double the time involved by the entire open-hearth process.

Vice President D. D. Mann, of the Canadian Northern railway, announces that plans for the new shops at Fort Rouge, near Winnipeg, have been approved and work commenced. The machine and directing shop will be 160 by 600 feet. This building and the roundhouse with 39 stalls, power house, blacksmith shop and foundry, are to be completed this year if possible, and a number of other buildings are included in the plans. Mr. Mann has furnished the Winnipeg board of trade with a report on the motive power of the company, respecting the inadequacy of which there has been much complaint. The company has 167 locomotives on lines west of Port Arthur of which 142 are in active service. Nine second-hand locomotives have been purchased for immediate delivery. The company has on order 140 locomotives for delivery this year and during the early months of 1908; 55 from the Canadian Locomotive Co., Kingston; 45 from the Locomotive & Machine Works, Montreal; and 40 from the Canada Foundry, Toronto. The stock of cars now on hand includes 5,200 box cars, 1,471 flat cars, 160 stock cars, 54 refrigerator cars, and 99 day passenger coaches.

Will Begin Construction.

Construction operations have been greatly delayed by the late opening of spring and transportation difficulties, but active work on railroad contracts will shortly begin. J. J. Lyons, the engineer in charge of the construction of the section of the Grand Trunk Pacific between Grand Falls. N. B., and the Quebec boundary, states that work will commence early in May. Edmundston, N. B., will be the headquarters. O. O. Winter, general superintendent of the Grand Trunk Pacific, states that work will be in progress on all the company's western lines next week. Men and supplies have for some time been collected at various points in readiness for a start. Two hundred miles of the line from Fort William west are ready for the steel, and the section between Fort William and Superior Junction is also graded. Contracts have been let for several big bridges on the latter section. A considerable section of the contract from Portage la Prairie west is completed.

The plans of the Canadian Northern Railway Co. for extensive construction in the west have been blocked by the action of parliament, which has thrown out the clause of a bill authorizing the construction by the company of 2,600 additional miles of road in Alberta, Saskatchewan and British Columbia, including the proposed extension of the line from Edmondton to the Pacific coast. The western members were opposed to giving the Canadian Northern any further powers of extension until it had shown itself able to adequately equip and operate existing lines, its failure to do so for some months having entailed much loss and hardship.

The Imperial Steel & Wire Co., Collingwood, Ont., has made arrangements for the erection of a large branch factory at Fort William, Ont., to meet the demands of their rapidly growing western trade. It will have a capacity of 100 tons daily and will manufacture only the coarser wires. Work will be begun in June.

The labor situation is very uncertain and threatening, strikes have occurred in several trades while others are formulating demands for more pay. Trouble between the jobbing foundries and the iron molders has been averted by a settlement conceding a 9-hour day and granting an increase of wages. Molders will receive a minimum of $2.90 and core-makers of $2.65. This does not apply to the larger shops, where 10 hours is the rule. Sheet metal workers and structural iron workers are threatening to strike if demands are not conceded.

The Concrete Engineering & Construction Co., Ltd., Toronto, is chartered to do all kinds of concrete and steel and iron work with $40,000 capital. John V. Gray, Arthur F. Wells and Robt. D. Moorhead are provisional directors.

The National Tube Co. has ordered some all-steel cars of 4,000 pounds capacity from the Youngstown Car & Mfg. Co.

FOREIGN MARKETS

For American Farm Machinery Discussed by Consuls.

Writing on the opportunity for the sale of American farm machinery in France, Consul-General R. P. Skinner of Marseille states that if the implement trade is to be greatly extended, the American firms who do not at present possess any French trade must create selling agencies as reliable and important as the concerns now acting as such, and this can scarcely be done by correspondence. "If certain unrepresented American manufacturers producing other forms of agricultural implements would combine in the organization of an American agency for the importation and direct sale to the consumer of their own machines," says Consul Skinner, "the capital required would not impose a very great burden upon the constituent members of such a combination, and would enable them to reach the French farmer with an effectiveness entirely beyond their grasp in the actual state of this business." Consul H. W. Harris of Mannheim reports that in recent years grain drills have come into rapid use in Germany and have largely superseded hand sowing of grain, but that this trade is quite fully looked after by German factories, though in former years and perhaps now, some American drills are sold. Consul-General W. F. Wright of Bavaria says that it is possible that American goods might find sale if their introduction was energetically pushed by salesmen familiar with the language, customs and business conditions and competent to fully demonstrate the superiority of the American implements. From Switzerland, Consul George Gifford of Basel reports there is an opportunity to establish a moderate business in agricultural machinery in that part of Switzerland and in the contiguous regions of Baden and Alsace in Germany. He states, however, that it is necessary for American representatives to personally demonstrate the merits of the machines. Consul C. N. Daniels of Sheffield believes it would be exceedingly difficult for a new machine, and particularly an American one, to push out the home product and take its place there, as the English farmer is thoroughly conservative and slow to change his methods and tools. Consul H. S. Culver of Cork says that he has found that American agricultural implements are used to a limited extent in the south of Ireland. Consul-General L. M. Iddings of Cairo advises that there is a reasonable demand in Egypt for farm implements, pumps, contractor's tools and similar articles.

STEEL CASTING INDUSTRY

Annual Production Shows a Marvelous Increase—New Plants.

NO BRANCH of the foundry industry has experienced a greater growth in the last decade than the manufacture of steel castings, and notwithstanding the marked development in the past few years, the number of plants projected and under construction foreshadows expansion unparalleled in the history of the trade.

This growth is largely due to the substitution of steel castings for gray iron and forged sections, although heavy inroads have been made on car bolsters for freight service formerly built from structural shapes. The processes of manufacture, particularly the converter and open-hearth, have undergone wonderful changes in the past five years, and many of the difficulties that beset earlier operations have been overcome. The heavy losses associated with this practice until a comparatively recent date have been reduced to the minimum and the selling price of the product has declined proportionately. The heavier sections are now being sold almost on a par with gray iron, while lighter castings are offered at only a slight advance.

The successful adaptation of the green sand mold has been a potent factor in the forward movement of this industry, having entirely eliminated the expense of drying in ovens with its attendant danger of breaking down the molds by repeated handling. The perfection of the basic process has likewise contributed to this cost reduction, but while big gains have been made in the output of furnaces with basic linings, the production of acid castings still leads by a wide margin. In the west, notably the St. Louis district, the basic process has reached its highest state of efficiency, while in the east the acid process is still in its ascendancy. Out of a total of 407,403 tons of acid castings made in the United States in 1906, the New England states, New York, New Jersey and Pennsylvania, produced 326,935 tons. On the other hand, these states contributed only 62,573 tons of the basic output last year, which amounted to 305,754 tons.

The accessibility of the basic irons of the south has largely influenced the development of the basic steel casting industry in the west and southwest, whereas the manufacturers in the east have an abundant supply of low phosphorus and Bessemer iron. During the past year the production of low phosphorus iron has, however, been insufficient for the requirements of seaboard plants and large purchases have been made from foreign operators. This iron has also been used to a limited extent by foundries in the Milwaukee and St. Louis districts, but in view of the long haul, shipments to this section, except to tide over emergencies, are both unprofitable and impractical.

Eastern foundries are advantageously located for an adequate supply of scrap for the acid process, while this situation is reversed in the west. Many railroads have recently ceased specifying the process by which steel castings are to be made, which has in no small measure aided western manufacturers.

The annual output of basic castings in the St. Louis district now reaches a total of 150,000 tons, only three works contributing. The foundry operated by the Scullin-Gallagher Iron & Steel Co. is the largest plant of its kind in the world. Its equipment consists of eight open-hearth furnaces, and two converters. The other two foundries in this section are operated by the Commonwealth Steel Co. and the American Steel Foundries.

Within six years the production of steel castings has increased over 500,000 tons. In 1900 the total output of Bessemer, open-hearth and crucible castings amounted to only 192,803 tons, as compared with 713,157 tons of basic and acid castings alone in 1906.

The growth of the industry in the last nine years is best shown by the following figures:

1898	131,937
1899	181,112
1900	192,803
1901	317,570
1902	390,935
1903	430,265
1904	330,211
1905	560,767

Basic and open-hearth castings only.

1906	713,157

Although figures are not available, the output of crucible castings in 1906 will be within 7,000 tons. The manufacture of castings by this process has also shown a slight increase from year to year. The production of converter steel castings in 1905 was 22,103 tons as compared with 6,764 in 1901. The estimate for 1906 is well above 25,000 tons.

The production of basic and acid castings in 1906 was by far the largest in the history of the trade. Of the total production in that year, 407,403 tons, or over 57.10 per cent, were made by the acid process and 305,754 tons, or almost 42.9 per cent, were made by the basic. As compared with 1905, when 320,381 tons of castings were made by the acid process, the increase in 1906 by this practice was 87,022 tons. By the basic process the increase was 99,595 tons, the production in 1905 having amounted to 206,159 tons.

The following table gives the production of open-hearth steel castings by both the basic and acid processes in 1906, by states, in gross tons:

States.	Basic Castings.	Acid Castings.	Total Gross Tons.
New England, New York and New Jersey	38,533	50,977	89,510
Pennsylvania	24,040	275,958	299,998
Illinois, Ohio and other states	243,181	80,468	323,649
Total	305,754	407,403	713,157

The plants completed during the year, under construction, and projected, are given below:

Open-Hearth Steel Foundries Recently Erected.

National Foundry Co., Erie, Pa. One 20-ton furnace.

Bucyrus Steel Casting Co., Bucyrus, O., one 20-ton furnace.

Scullin-Gallagher Iron & Steel Co., St. Louis, one 20-ton furnace. The complete equipment of this plant now consists of eight furnaces of the open-hearth type.

Atha Steel Casting Co., Newark, N. J., three 20-ton furnaces.

The Steel Foundry Co., Cincinnati, one 20-ton basic and one 12-ton acid furnace.

Shull Steel Casting & Mfg. Co., Canton, O., one 10-ton furnace.

Federal Steel Foundry Co., Chester, Pa., one 25-ton furnace, daily capacity, 75 tons.

Prescott Co., Menominee, Mich., basic open-hearth furnace, daily capacity, 50 tons.

Open-Hearth Steel Casting Plants Under Construction.

Washburn Co., Minneapolis, one 20-ton basic and one 15-ton acid furnace.

Industrial Works, Bay City, Mich., one 10-ton furnace.

Ohio Steel Foundry Co., Lima, O., one 10-ton furnace.

Best Steel Casting Co., Montreal, Canada, one 10-ton furnace.

Converter Steel Casting Plants Recently Erected.

Scullin-Gallagher Iron & Steel Co., St. Louis, two converters.

Velte Foundry & Machine Co., Pittsburg, one converter.

West Steel & Iron Casting Co., Cleveland, one converter, and the installation of the second is being considered.

Reading Steel Casting Co., Reading, Pa., two converters.

Converter Steel Plants Under Construction.

Curtis & Co. Mfg. Co., St. Louis, two converters.

Bonny-Floyd Co., Columbus, O., one converter.

Link-Belt Co., Chicago, one converter.

Keystone Driller Co., Beaver Falls, Pa., one converter.

Crucible Steel Casting Plants Recently Completed.

Chicago Steel Foundry Co., Chicago.

E. G. Rippel Steel Foundry, Buffalo, three crucible oil furnaces. The installation of two additional furnaces is being considered.

Crucible Steel Casting Plants Under Construction.

Lebanon Steel Casting Co., Lebanon, Pa.

Keystone Steel Casting Co., Chester, Pa. Castings by the crucible steel and McHaffie steel processes.

Steel Casting Plants Projected.

Armor Steel & Foundry Co., Chicago, new plant to be built at Joliet, Ill.

Levalley Mfg. Co., Milwaukee.

Milwaukee Steel Foundry Co., Milwaukee.

The Christy Steel Co., Akron, O., will manufacture crucible steel and nickel steel castings for automobile and machine parts.

The Michigan Crucible Steel Castings Co., Detroit, will manufacture crucible castings for automobiles.

Bessemer Steel Casting Co., Bessemer, Ala., will manufacture basic open-hearth steel castings by the Hawkins-Key process. This plant is to have a capacity of 75 to 100 tons daily.

A new company is being organized by Francis M. McGinty, Alliance, O., to manufacture open-hearth steel castings, the equipment to consist of one 20-ton open-hearth furnace.

C. W. G. Everhart, president of the Challoner Foundry Co., Oshkosh, Wis., is planning the erection of a steel casting plant in that city to supply the requirements of the Challoner Co.

Exports Exceed Imports.—In the fiscal year ended June 30, 1906, United States exported to France and Germany iron and steel manufactured products of the value of $3,341,407 and $7,602,332 respectively, according to the bulletin issued in tabulated form by the government Bureau of Statistics. During the same period iron and steel manufactured products of the valuation of $620,107 and $6,311,326 respectively were received by the United States as imports from France and Germany.

The Cambria Steel Co. is pushing work on its new furnace, No. 8, near Johnstown, Pa., and it is expected that it will be ready to start in August or September. This furnace is one of the two big ones started by the company some time ago. No. 7 has been in operation since early in 1906.

LARGE GAINS

Shown by Operations of General Electric Co. in Past Year.

A large gain in the total receipts and a substantial increase in the net surplus are shown by the General Electric Co. as the result of its operations for the year ended Jan. 31, 1907. The annual report of the company shows total receipts of $61,608,831, against $44,419,613 in 1906, a gain of $17,189,218, and a net surplus of $3,083,501, compared with $2,458,099 in 1906, an increase of $625,402. The income account compares as follows:

	1907.	1906.	1905.
Tot. receipts.	$61,608,831	$44,419,613	$40,323,354
Exp. int. etc.	53,180,989	37,100,452	33,603,808
Net	$ 8,427,842	$ 7,319,161	$ 6,719,546
Dividends	4,344,342	3,861,062	3,864,384
Surplus	$ 4,083,500	$ 3,458,099	$ 3,035,162
Written off	999,999	1,000,000	759,654
Surplus	$ 3,083,501	$ 2,458,099	$ 2,275,508
Prev. sur.	12,027,295	9,569,196	7,293,688
Tot. sur.	$15,110,796	$12,027,295	$ 9,569,196

SHORT WEIGHTS

Are Complained of by the New England Foundrymen.

The regular monthly meeting of the New England Foundrymen's Association was held at the Exchange Club, Boston, on May 8.

The committee appointed at a previous meeting to investigate the matter of short weights on shipments of pig iron, coal and coke, reported that a circular letter outlining the purpose of the committee had been mailed to all the foundries in New England and from responses received, considerable interest was being manifested by the various foundrymen throughout this section and a majority of them complained of continually receiving short weights in their shipments and agreed that some method should be adopted in adjusting the matter of weights for the protection of the consumer.

The secretary reported the death of A. F. Nichols, of Lowell, Mass., and the chair appointed Frank Pevey, James Pevey and Wm. Doherty a committee to prepare resolutions. The Nichols Foundry Co., Lowell, Mass., and the Machine Sales Co., of New York, Peabody, Mass., were unanimously elected to membership.

After dinner, the speaker of the evening, James Wood Pogue, of Sheldon School of Salesmanship, Boston, gave a very interesting and instructive talk on "The Science of Business Building." Mr. Pogue went very deeply into the subject and dwelt largely on the knowledge of men and comprehension of character. His address was received with much favor.

HEAVY ORDERS

Indicate Return of Railroad Confidence.—Chicago Machinery Market.

Office of THE IRON TRADE REVIEW,
1362 Monadnock Block, Chicago, May 13.

The return of confidence to railroads and other large buyers, foreshadowed last week by the sending out of specifications for tools by several railroads showed more strongly during the past week. Sales have been unusually heavy. Orders which had been awaited in some cases for six weeks were placed. The increase affected not only the large machines but the demand for smaller tools was increased. The general trade which had not been seriously affected at any time by the stock flurry has remained about the same.

"I believe that all danger from the situation is over now," said the vice president of a large machine tool house. "The only thing to be feared at any time was a loss of confidence by the people which might cause a panic. The distrust is gone and people who have kept out of market are making purchases. The lull has been of advantage to us as we are nearer to catching up with our orders than at any time in eighteen months. I personally know of railroad orders which have been held up since the first Wall street flurry which came out last week. I knew they were coming and had given them my personal attention. Excuses were given me from week to week until Thursday. Incidentally I might add we are building the machines."

The Hodge & Homer Co., dealer in builders' hardware and mechanics' tools, for thirty-five years located at 47-49 West Randolph street, has leased new quarters at 58-60 West Madison street.

A number of Chicago men are planning to attend the meeting of the Central and Eastern Supply Association to be held at the Pine Beach hotel, Norfolk, Va., June 5 and 6. The organization consists of firms dealing in supplies for water, steam, and gas installation.

The Harrisburg Pipe & Pipe Bending Co., operating a steel, pipe and rolling plant in Harrisburg, Pa., has put into operation its pipe mill which has been idle for about eighteen months. The plant was started on single turn and it is the intention to operate it regularly. The company is running its steel plant on full time and has added another turn to its rolling mill.

Developments Discourage Stock Trading.

Developments during the week under review, which have permitted of an unfavorable interpretation, have contributed their effect to materially depress and discourage operations in the stock market in addition to increasing the spirit of pessimism in some quarters as to the future. Prominent among these factors of influence has been the report by the government of wheat prospects up to May 1. The report put the statistical condition of winter wheat at 82.9 per cent, as against 89.9 per cent on April 1 and 91 per cent on May, 1906. These figures indicated in connection with the reduction of 3,522,000 acres in the area planted since the beginning of the season, a total yield of about 405,000,000 bushels, as compared with the natural harvest last year of 493,000,000 bushels. The average yield of winter wheat for the years, 1902 to 1906, has been 413,000,000 bushels. From present prospects, if the growing wheat does fairly well from this time until the end of July, the yield may easily be up to the average. From this fact it appears that the pessimistic view of the crop outlook which was taken by some, following the issuance of the government report, is rather premature and hardly well founded. Nevertheless the uncertainty of the crop situation continues to have a strong bearing upon stocks. Another announcement during the week which helped to chill enthusiasm in market trading was that of the Union & Southern Pacific plan of new capital issues. This provided for the issuance of $75,000,000 4 per cent debentures at 90 convertible into Union Pacific common stock at 175, and $36,000,000 additional Southern Pacific preferred stock offered at par. The authorization of $100,000,000 more Union Pacific common stock of which $40,000,000 is for conversion purposes and the remaining $60,000,000 for future use is also contemplated. The force of the first unfavorable impression of the Union Pacific plan was modified to some extent by later consideration, which took more account of the limitation of the propsed new stock to the conversion requirements of the bonds, of the large element of refunding of floating indebtedness involved in the plan and of the fact that much of the Southern Pacific obligations, for which provision is sought, is that of the parent company, the Union Pacific. The stock market during the week was in the main dull and heavy and of strictly professional trading. The average price of 20 railroad stocks declined from 109.64 on May 4 to 106.76 on May 10, closing Saturday at 107.08. Some sharp declines have occurred. A few favorites took almost all the attention of speculators, and when these displayed a reactionary tendency, there was a sympathetic effect apparent on the whole market. Although the New York associated banks lost $2,383,600 on their cash holdings during the week, their reserve surplus was increased $1,661,000. This was owing to a decrease in the reserve requirements by reason of the withdrawal of $16,180,800 of deposits. Against this drop in deposits, loans were contracted $14,100,000. The associated banks now hold $8,486,000 in excess of their legal reserve requirements, as compared with $12,894,600 May 12, 1906. Trading on the New York stock exchange during the week amounted to 3,320,400 shares, as compared with 3,824,565 shares last week, and 6,459,400 shares the corresponding week of 1906. Bonds have been dull and rather heavy on account of the anticipated new issues.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. May 11	Changes In Week	Date 1907 Ann. Meet.	Stock Outstanding	Dividend Basis	Dividend Being Paid	Dividend Date Last Div. Pay.
Allis-Chalmers	11¼	− ⅛	Sept.	19,820,000			
Allis-Chalmers pr	32	+ ¾		16,150,000	7 cum		Feb., 1904
American Can	6	− ¾	Feb.	41,233,300			
Am. Can pr	55			41,233,300	7 cum	5 Q.	Apr., 1907
Am. Car and Fdy	36¾	−1	June 27	30,000,000		2 Q.	Apr., 1907
Am. Car and Fdy pr	100	+ ¼		30,000,000	7 n. c.	7 Q.	Apr 1907
American Loc.	61¼	−2⅜	Oct. 5	25,000,000		1¾ Q.	Feb., 1907
American Loc. pr	106	−4		24,100,000	7 cum	7 Q.	Apr. 1907
American Ship.	77⅜	+3½	Oct. 2	7,600,000	6	1 Q.	Mar. 1907
American Ship. pr	105	+1		7,900,000	7 n. c.	1¾ Q.	Jan. 1907
Am. Steel Foundries	7⅛	− ⅛	Oct. 1	15,810,000			
Am. Steel Foundries pr.	39			17,240,000	6 cum		Aug., 1904
Barney & Smith	70		June 4	2,000,000	4	4	Mar., 1907
Barney & Smith pr	138½			2,500,000	8 cum	8 Q.	Mar., 1907
Bethlehem Steel	12		April 2	14 862,000			
Bethlehem Steel pr	49			14,808,000	7 n. c.	1¾ Q.	May, 1907
Cambria Steel	38	−1	Mar. 19	45,000,000*	6	3 Q.	Feb., 1907
Cambria Iron	48			8,468,000*	4	1 S. A.	Apr., 1907
Chicago Pneumatic Tool	41½		Feb. 18	6,145,800	4	4 Q.	Apr., 1907
Colorado Fuel	33⅜	−2	Oct. 21	30,132,000			Apr., 1908
Crucible Steel	9	− ⅛	Oct. 16	24,578,400			
Crucible Steel pr	71½	−1		24,486,500	7 cum	6	Mar., 1907
Empire Steel	9		Feb. 27	2,381,400			
Empire Steel pr	50			2,500,000	6 cum	3 S. A.	July, 1906
Fay & Egan	100		Feb. 19	1,000,000	6	7 Q.	Feb., 1907
Fay & Egan pr	128½			1,000,000	7 cum	7 Q.	Feb., 1907
General Electric	146½	−2	May 14	60,643,600	8	8 Q.	Apr., 1907
Harbison-Walker	115		Jan. 21	18,000,000	6		
Harbison-Walker pr	73½	− ⅜		9,600,000	6 cum	6 Q.	Jan., 1907
International Pump	27		June 4	17,762,500		2	Apr., 1905
International Pump pr	79			11,350,000	6 cum	6 Q.	May, 1907
Lackawanna Steel	50		Mar. 13	34,971,400			
Lake Sup. Corp	9		Oct. 2	40,000,000			
New York Air Brake	118½	− ½	June 18	10,000,000	8	8 Q.	Apr., 1907
Niles-Bement-Pond	130		Feb. 6	5,000,000	6	6 Q.	Mar., 1907
Niles-Bement-Pond pr	105			2,000,000	6 cum	2 Q.	May, 1907
Otis Elevator Co.	36		March 18	6,350,800		3 A.	Apr., 1907
Otis Elevator Co. pr.	10	− ½		6,808,500	6 n. c.	6 Q.	Apr., 1907
Penn. Steel	60		May 13	10,750,000			
Penn Steel pr	90			16,500,000	7 n. c.	3½ S. A	May, 1907
Pittsburg Coal Co	12¼		Feb. 11	32,000,000			Nov.
Pittsburg Coal pr	55⅝	+ ⅜		32 000,000	7		Apr., 1905
Pressed Stl Car	34½	−2½	Feb. 20	12,500,000		3	Aug., 1904
Pressed Stl. Car pr	92½	− ⅝		12,500,000	7 n. c.	7 Q.	Feb., 1907
Pullman	167	+2	Oct. 17	100,000,000	8	2 Q.	May, 1907
Railway Stl. Spring	44		Mar 7	13,500,000		4 S. A.	Mar., 1907
Railway Stl Spring pr	94	− ½		13,500,000	7 cum	7 Q.	Mar. 1907
Rep. Iron & Steel	26⅝	− 1⅜	Oct. 9	27,191,000			
Rep. Iron & Steel pr	85	+ ¼		20,416,900	7 cum	7 Q.	
Sloss-Sheffield	59¼	+3½	Mar. 5	10,000,000	5	5 Q.	Apr., 1907
Sloss-Sheffield pr	99			6,700,000	7 n. c.	7 Q.	Oct., 1906
Tenn. Coal & Iron	141½	+ ½	May 7	22,353,000	4	4 Q.	Apr., 1907
U. S. Pipe & Fdy	37⅛	− ¼	June 26	12,500,000	4	4 Q.	May, 1907
U. S. Pipe & Fdy. pr	83	−1⅝		12,500,000	7 n. c.	7 Q.	Dec., 1906
U. S. Steel	37⅛	− ⅜	April 15	508,302,500	2 n c	½ Q.	Dec., 1906
U. S. Steel pr	100¼	−1¼		360,281,100	7 cum	7 Q.	Mar., 1907
U. S. Steel 5's	96⅜	− ⅛		463,798,000	5	5 A.	Feb., 1907
Va. Iron, Coal & Coke	71		Sept. 17	8,641,600			
Westinghouse Elec	145½	+1	July 24	24,998,700*	10	10 Q.	Apr. 1907
West'ghouse Air Brake	146	−2	Oct. 1	11,000,000*		22½ Q.	Jan., 1907

Par value of shares, $100 except those starred, $50.

The American Car & Foundry Co. reports orders on the books for 80,977 cars of all descriptions for delivery this year. The company delivered 9,000 cars, freight, passenger and mail, during the month of March. The Gould lines have placed orders for 11,000 cars, the Harriman lines for 6,000 cars, the Santa Fe, 4,000; Rock Island, 3,000; New York Central, 6,500 and Northern Pacific, 4,100.

NEWS FROM MANY INDUSTRIES.

New Buyers:—

The Eagle Brass Foundry Co., Seattle, Wash., has been organized with a capitalization of $10,000 by Alexander G. Howat, William Anderson and John Tracy.

The Missouri Iron Co., St. Louis, has been organized with a capitalization of $9,000 by Edward F. Goltra, Jesse D. Dana, Pierre C. Maffitt and Thomas S. Maffitt.

The Advance Foundry Co., Dayton, O., has been incorporated with a capital of $25,000 by Thomas M. Sweetman, George A. Engel, Annie Engel, William C. Kette and Mary C. Sweetman.

The Hastings Foundry & Iron Works, Hastings, Neb., has been incorporated with a capital of $30,000 by A. L. Clarke, C. B. Hutton, C. G. Wallace, George Wilkes and A. H. Farrens.

The Standard Wire Fence Mfg. Co., Fort Worth, Tex., has been organized with a capitalization of $25,000 to manufacture wire fence. Oswald Wilson is president.

The A. L. Greenberg Iron Co., Terre Haute, Ind., has been organized with a capitalization of $40,000 by Jacob R. Finkelstein, Abraham L. Greenberg and Samuel T. Greenberg.

The Auto Machine Works, New York, has been incorporated with a capital of $10,000 by Walter R. Comfort, 32 New Chambers street; Douglas Nicholson and John T. Grieve, 203 Broadway, all of New York.

The Jaconson Engine Co., Chester, Pa., is being organized with a capitalization of $100,000 for the manufacture of high-power gasoline engines. It is stated that the new concern has already acquired the Roberts mill at Chester.

The Best Steel Casting Co., Montreal, Que., has been organized to engage in the manufacture of basic open-hearth steel castings. One 10-ton furnace will be installed. The plant will be operated by T. J. Best.

The Empire Steel & Equipment Co., Philadelphia, has been incorporated under the laws of Delaware with a capital of $300,000. The incorporators are: I. H. Case, Plainfield, N. J.; Charles R. Day, East Orange, N. J.; George W. Ireland and J. W. Thatcher, Philadelphia.

The Ontario Iron Ore Co., Ontario, N. Y., has been chartered with an authorized capital of $50,000 by George F. Waters, Pultneyville, N. Y.; Isaac Hurley, Ontario, N. Y., and Frank E. Young, Syracuse, N. Y.

The Northern Machine Co., Somerville, Mass., has been chartered with an authorized capital of $150,000 by Joel Bradsley of Pawtucket, R. I., Thomas C. Scottron of Somerville, Mass., and Harry K. Lea of Providence.

The Peoria Malleable Iron Works, Peoria, Ill., has been incorporated to manufacture machinery tools and implements. The capital stock of the company is $75,000, and the incorporators are: George T. Page, C. E. McNemar and John C. Scully.

The Williams Supply & Mfg. Co., Phillipsburg, N. J., has been organized with a capitalization of $50,000 to manufacture iron, steel, coke, copper, etc., by William A. Williams and George F. Coffin of Easton, Pa., and Thomas F. Marnell of Phillipsburg.

The Fowler Co., Oil City, Pa., has been organized with a capitalization of $20,000 to manufacture gasoline, electric and other engines, by William M. Moland, William B. James, Orah Smith, Edgar C. Moland and Clarence B. Grunden.

The Campbell Lock Co., Plainfield, N. J., has been incorporated with a capital of $100,000 to manufacture locks, bolts, tools, etc. The incorporators are John S. Campbell, William S. Campbell, Plainfield, N. J., and Joseph D. Baucus, New York.

The High Point Machine Co., High Point, N. C., has been incorporated to take over the High Point Machine Works and the Dixie Motor Co. The capital stock of the company is $250,000, and the incorporators are: E. W. Van Brunt, H. A. Megraw and C. S. Dutton.

Articles of incorporation have been filed by the Seattle Frog & Switch Co., 901-905 Lowman building, Seattle, Wash., dealer in railroad material, machinery and pig iron. The capital stock of the company is $20,000, and the incorporators are: M. J. Henehan and James McDonough.

The Motor Supplementary Spring Co., New York, has been chartered with an authorized capital of $5,000 to manufacture tools, machinery, etc., for automobile trade, by Andrew J. Cahill, 505 Fifty-sixth street, Brooklyn; Frederick Taylor and Charles J. Beattey, Boston, Mass.

The International Marine Motor Co., Detroit, Mich., has been organized with a capitalization of $20,000 by Philip S. Claus, Clarence A. Potter, Gus Carlson, John S. Claus, George E. Claus, Gustavus T. Kast, William C. Weiske, Lewis B. Shippey, Douglas McCracken, Winson A. Henneker and John Vimr.

The Cincinnati Pulley Machinery Co., Cincinnati, O., has been chartered with an authorized capital of $15,000. L. B. Patterson will be president and J. George Hey, vice president and general manager. The company has secured the building at 118-120 West Second street, where the plant will be located.

The Excelsior Compressor Co., New York, has been chartered to manufacture motors, engines, cars, etc. The authorized capital stock of the company is $25,000, and the incorporators are: William J. Jeandron, 20 Vesey street; Herbert Wallace, 11 Pine street, and Edward S. Taylor, 299 Broadway, all of New York.

The Auto Process Shops, New York, has been organized to manufacture automatic and other machinery. The capital stock of the company is $500,000, and the incorporators are: Morris Levinsky, 3 West 111th street; William J. Levy, 220 Henry street, and Elias H. Avram, 501 East Seventy-eighth street, all of New York.

New Construction:—

The Morse Twist Drill & Machine Co., New Bedford, Mass., has begun work on a frame addition, two stories, 40 x 71 feet, to its plant.

The American Iron & Steel Co. has awarded the contract for the erection of a one-story brick and iron addition, 40 x 60 feet, to the mill of its plant at Reading, Pa.

The Modern Foundry Co., recently incorporated, has purchased a site of 6½ acres at Oakley, a manufacturing colony near Cincinnati, and is contemplating the construction of a plant.

The Reading Stove Works, Reading, Pa., has awarded the contract for the erection of a five-story warehouse and three large foundry buildings. The warehouse will be fire-proof of brick 50 x 60 feet in dimensions. Each of the foundries will be one-story high of brick 40 x 120 feet.

The Youngstown Car Mfg. Co., Youngstown, O., in order to meet the rapidly increasing demands on its business, has let the contract for a new steel erecting shop 55 x 260 feet. No machinery or equipment will be needed. The company builds all kinds of narrow gage industrial cars and standard wooden freight cars of any capacity.

Owing to the large increase in the business of the Electric Cable Co., an extensive addition is to be made to its plant at Bridgeport, Conn. The new building will be constructed of concrete and brick and will embody the most improved forms of fire-proof construction and equipment. The addition will be de-

voted exclusively to the production of weatherproof wires and cables.

The Osborn Engineering Co., of Cleveland, has prepared plans for the construction of a large addition to the plant of the Cleveland Foundry Co. The Osborn company has just completed a two-story building 50 x 175 feet for the foundry concern, but the business requirements of the latter made it necessary to add two additional stories to the new structure. The building complete will be four stories, 50 x 175 feet.

The James Morrison Brass Mfg. Co., Toronto, Can., whose plant was recently damaged by fire, reports that its brass foundry will be rebuilt at once, with four stories additional to provide for space accommodation, of which the concern has been badly in need. Orders for immediate requirements in foundry equipment have been placed. The company, however, will need a suction fan and other apparatus for ventilating purposes.

The Keystone Driller Co., Beaver Falls, Pa., will erect a new foundry 110 x 300 feet, for the manufacture of brass, gray iron and steel castings for its own use. Steel will probably be made by the Bessemer or some other converter process. The foundry buildings will be of steel and brick construction. This company has recently taken over the business of the Downie Pump Co.

The Republic Metalware Co. is about to erect a warehouse and office building 66 x 172 feet, six stories and basement, with switch track facilities at the junction of Wabash avenue and the St. Charles Air Line railroad, Chicago. The building will be of reinforced concrete construction, and it is expected to do some light manufacturing of bulky goods in it. The main factories of the company are located at Buffalo, N. Y.

The addition which the Diamond Chain & Mfg. Co., Indianapolis, Ind., is building to its present factory consists of a structure 50 x 120 feet, four stories and basement, of mill construction. The company is not in the market for any additional machinery at this time. The rapid increase in the use of chains for the transmission of power has made it necessary for the concern to enlarge its floor space and facilities.

Bids for the construction of a new pattern shop for steam engineering for the United States navy yard at Portsmouth, N. H., were opened at the bureau of docks and yards May 11. The recent fire that visited the yard damaged a building, part of which was used for a steam engineering pattern shop, but the plans for the new building had already been prepared and its construction at this time will very opportunely replace a portion of the damaged plant.

The Standard Railway Equipment Co. has broken ground on a site of 14 acres for the erection of a two 15-ton furnace plant at New Kensington, Pa. It is expected that the plant will be in operation by Sept. 1, turning out 30 to 35 tons of finished castings per day. Next spring, and probably sooner, it is expected to double the capacity of the concern. As soon as the company can complete the necessary legal steps and procure a charter, it will be known as the Allegheny Valley Malleable Iron Co. of New Kensington, Pa. P. H. Murphy of St. Louis is at the head of the corporation and has associated with him as manager, A. W. Phelps, formerly manager of the St. Louis Malleable Casting Co., who also has an interest in the company.

General Industrial Notes:—

The Decatur Furnace Co., Decatur, Ill., at its annual election chose the following officers: President, D. J. Guilfoyle; treasurer, C. A. Dugan, and secretary and manager, James Duherty.

The Eastern Sheet Steel Co., 39 Cortlandt street, New York, has made an assignment without preference. The company was incorporated for $50,000 about two years ago and did considerable school and municipal work. DeWitt T. Lyon is secretary and treasurer.

T. B. Wilson has been elected president of the Globe Iron Works Co., Menomonie, Wis., and H. W. Young vice president to succeed A. Dollenmayer, resigned. Mr. Young has also succeeded G. A. Chaffee on the board of directors. C. W. Moffett has resigned as superintendent and F. E. Watkins, formerly of Beloit, Wis., will serve as both superintendent and manager.

The El Starr Mfg. Co., Milwaukee, Wis., recently incorporated, reports that it manufactures hand and foot power tool grinders, small household water motors and other specialties. A large number of orders are on hand insuring a prosperous operation during the year. The company is considering the building of a factory of its own some time in the future, but at present it is renting quarters.

The American Castings Co., Columbus, O., founder, states that it is now located in a plant 30 x 100 feet. The company has installed material draft furnaces and at the present time has a capacity sufficient to produce one ton of castings per day. No equipment is needed at present, but the business is increasing in such a volume as to make additional space and capacity necessary in the near future.

Trade Notes:—

The Green Engineering Co. has changed its Chicago address to 1848 Commercial Bank building.

The New York office of the Standard Railway Equipment Co., St. Louis, has been changed from 122 Liberty street to 90 West street.

The Chicago quarters of the Shelby Steel Tube Co. have been moved to room 726 Commercial National Bank building, Adams and Clark streets.

The Universal Portland Cement Co. announces the removal of its general offices to the Commercial Bank building, Chicago. The Pittsburg offices of the company have also been established in the Frick building.

The new plant of the Michigan Copper and Brass Rolling Mills of Detroit will have two 5-ton, 3-motor electric traveling Northern cranes. These cranes are of the low type, direct current design, and have already been installed by the manufacturers, the Northern Engineering Works, Detroit.

The Southwestern Bridge Co., Joplin, Mo., has recently secured a number of large sized steel contracts. Among these is the contract for the new 250-ton mill of the Mercantile Metal Milling Co., at Webb City, including steel tank and tower. This will be the first mill constructed entirely of steel in the lead and zinc district of Missouri. The company will also furnish nine steel mill buildings and two steel tanks and towers for the Kaw Gas Co. of Independence, Kas.; the steel for three pump houses, two boiler houses and one warehouse for the Texas Co., Dallas, Tex., and a steel tank and tower for the Lanyon Starr Smelting Co. of Bartlesville, I. T.

Fires:—

Fire in the pattern shop of the James Reilly Repair & Supply Co., Jersey City, N. J., May 3, caused a loss of about $10,000.

The Amherst Foundry Co., Ltd., Amherst, N. S., was damaged to the extent of about $40,000 by fire May 2. Part of the loss is covered by insurance.

The Prime Steel Co., Milwaukee, Wis., recently suffered heavy damage from fire in its foundry, pattern shop and core room. The loss is well covered by insurance. Orton L. Prime is president of the company.

Building permits for the reconstruction of San Francisco issued during the month of April aggregated in value $6,566,591. The bank clearings of the city during the month were $198,158,811.30, and the custom receipts $698,178.68. It is stated that prices in building material, especially lumber, are decreasing, which will have a tendency to greatly increase building activity.

IMPORTANT CONTRACT

For Electric Power Made With the Canadian Government.

The Ontario Power Co., which is extensively developing Niagara Falls for generating electric power, has entered into a contract with the Canadian government to supply electricity in quantity. By the terms of the contract the company will sell from 30,000 to 100,000 horsepower every day, which means that the Canadian government must pay to the company a sum which will vary from $300,000 to $1,000,000 according to the power consumed. The rate paid is $10.40 per horsepower for all power consumed not exceeding 25,000 horsepower, but all power taken in excess of this amount will be furnished the government at a flat rate of $10.

Probably no more remarkable contract has been made in the industrial world in many years than the one noted. It is said to be the first agreement of its kind ever made and the features of the documents involved are most unusual. For two years the question as to whether or not the Canadian government should buy electric power for municipal and manufacturing purposes and find its own methods of distribution has been an issue between political parties and at the last elections those favoring the project were victorious. The plan involved the creation of a body of men to represent the government and direct the distribution of the power which is taken from the cataract. This body is known as the Hydro-Electric Commission. The government turns over the electric power to the commission which sells it over to municipalities.

Each municipality will have the right to distribute the power, using what it desires for lighting and other public services and selling the remainder to manufacturers. Fourteen applications for power have been filed with the Hydro-Electric Commission, all of which are from Canadian municipalities and more will be made as the respective localities decide to use cataract power. Toronto has made application for 15,000 horsepower and Toronto Junction for 4,000 per day. It is believed that a great number of industries will spring up throughout Ontario as a result of the consummation of the deal.

Before the proposed system operates perfectly, considerable work must be done by the Canadian commission in the matter of building transmission lines to the various cities and villages which are to be supplied with power by the Ontario Power Co. It is agreed that the government must build the transmission lines at its own expense and relieve the power companies of all responsibility other than finishing the electricity, delivering it at Niagara Falls, Ont., at the rates stated.

Following the contract the statement is made by Gen. Francis V. Greene of the Ontario Power Co., to an IRON TRADE REVIEW representative that the plans of the company to build two additional conduits along the Niagara river at the cataract have been approved by the Niagara Falls Park Commission. These conduits, like the one now in operation, will convey the water used in generating electricity, from the point at which it is taken above the falls to the point at which it is discharged below the falls. The conduit now in operation is 6,000 feet in length and eighteen feet in diameter. The two additional conduits will be a little larger in diameter. The conduit in use has a capacity of 18,000 horsepower. It is entirely of steel construction with an outer wall of concrete. The two additional conduits will cost more than $1,000,000 and will meet the requirements of the contract with Canada.

FOREIGN TRADE OPPORTUNITIES.

(These inquiries from prospective foreign purchasers are furnished by American consuls to the Government Bureau of Manufactures, Department of Commerce and Labor. Those in which the addresses are omitted are on file at the Bureau of Manufactures, Washington, D. C. In applying for addresses refer to the file number.)

No. 974. Agricultural implements and tools.—An American consul in South Africa furnishes the name of a firm of general agents and contractors, with an American recently installed as manager of the importing and indenting department, which desires to represent through Natal and South Africa American exporters of a general line of agricultural implements and farming tools. This firm formerly confined its business to contractors' supplies, but recently extended its business.

No. 850. Railway equipment.—Foreign trade opportunity No. 750 stated that, according to official advices received by the department of state, the South Manchuria Railway Co., which is under the direction of the Japanese government, had decided to adopt the American system, and to place large orders for materials in the United States as an expression of appreciation of American's friendly relations.

No. 863. Agricultural implements.—An American consul reports that the government to which he is assigned is a large purchaser of agricultural implements, and now requires about $10,000 worth of plows. The proper official would be glad to receive at the earliest possible date catalogs with complete prices, etc.

No. 855. Pumping engines.—The government engineer in a foreign state wishes to obtain particulars and prices of small pumping engines, 1 to 2 horsepower, to run preferably on kerosene. These engines are intended to be used by owners of orchards for irrigation purposes. The American consul sending in the request states that if a successful type of kerosene or gasoline engine can be introduced into the district, the market for them will be considerable. Gasoline is difficult to procure there, hence a kerosene engine will find a readier sale. The price should not exceed $125, f. o. b. New York.

No. 860. Ice machinery.—An American consul in the Orient advises that information is desired regarding small ice machines having a capacity of 250 to 500 pounds daily. Full particulars regarding machines, engines (preferably kerosene engines), terms of sale and prices f. o. b. New York may be sent either to the contractor named by the consul or to the consulate.

No. 847. Cotton-seed machinery and oil.—A foreign firm desires illustrated catalogs of machinery (hand preferred) for thoroughly cleaning cotton seed; also samples and prices of high-grade cotton-seed oil for mixing with butter. In his factory he has been using palm oil, which he is forced to give up on account of heavy tariff duty.

PROMINENT MEN

Will Speak at Manufacturers' Convention, May 20, 21 and 22.

The National Association of Manufacturers will hold its twelfth annual convention and banquet, May 20, 21 and 22, at the Waldorf-Astoria hotel, New York City. Parts of three days are to be devoted to the business sessions of the convention, during which addresses are to be made, on some of the most important topics now before the business world, by government officials, manufacturers and others prominently identified with these subjects. The annual banquet is to be held on the evening of Wednesday, May 22.

Among the speakers at the business sessions will be: Hon. Charles A. Prouty, of the Interstate Commerce Commission, who has promised an address on "Further Railroad Legislation;" Hon. F. B. Loomis, ex-assistant secretary of state, "Some Practical Results of the Convention Reform Agitation;" Charles M. Pepper, special agent of the Department of Commerce and Labor to investigate trade conditions in foreign countries on "Foreign Trade· "How to Get it and Keep it;" Dr. Charles P. Neill, Commissioner of Labor, Department of Commerce and Labor, on "Certain Aspects of the Child Labor Problem;" Arthur D. Dean on "Trade Schools; the Manufacturer's or the Pedagogue's Sort;" Captain Henry A. Castle, late auditor of the treasury for the Post Office Department, on "Needed Postal Reform."

The chief speakers at the banquet will be: Hon. Oscar S. Straus, Secretary of Commerce and Labor; Senator J. P. Dolliver, of Iowa, who has promised that his address shall be on "The Revolt of the Unincorporated;" Rear-Admiral Charles D. Sigsbee, the hero of the Maine, for the navy; Major-General J. Franklin Bell, chief of staff, for the army, and Rev. Dr. Joseph Dunn Burrell, whose topic will be "The Era of Work."

Officials of the Carnegie Steel Co. visited Philadelphia recently to inspect the facilities there for handling incoming cargoes of iron ore and ferromanganese, of which 300,000 tons are said to have been brought in so far this year at that port. If the facilities are considered adequate, it is probable that the Carnegie company's import and export business will be done through Philadelphia.

The union machinists of Providence, R. I., have asked the machine shop operators in that city for a nine hour day and an advance of 50 cents a day.